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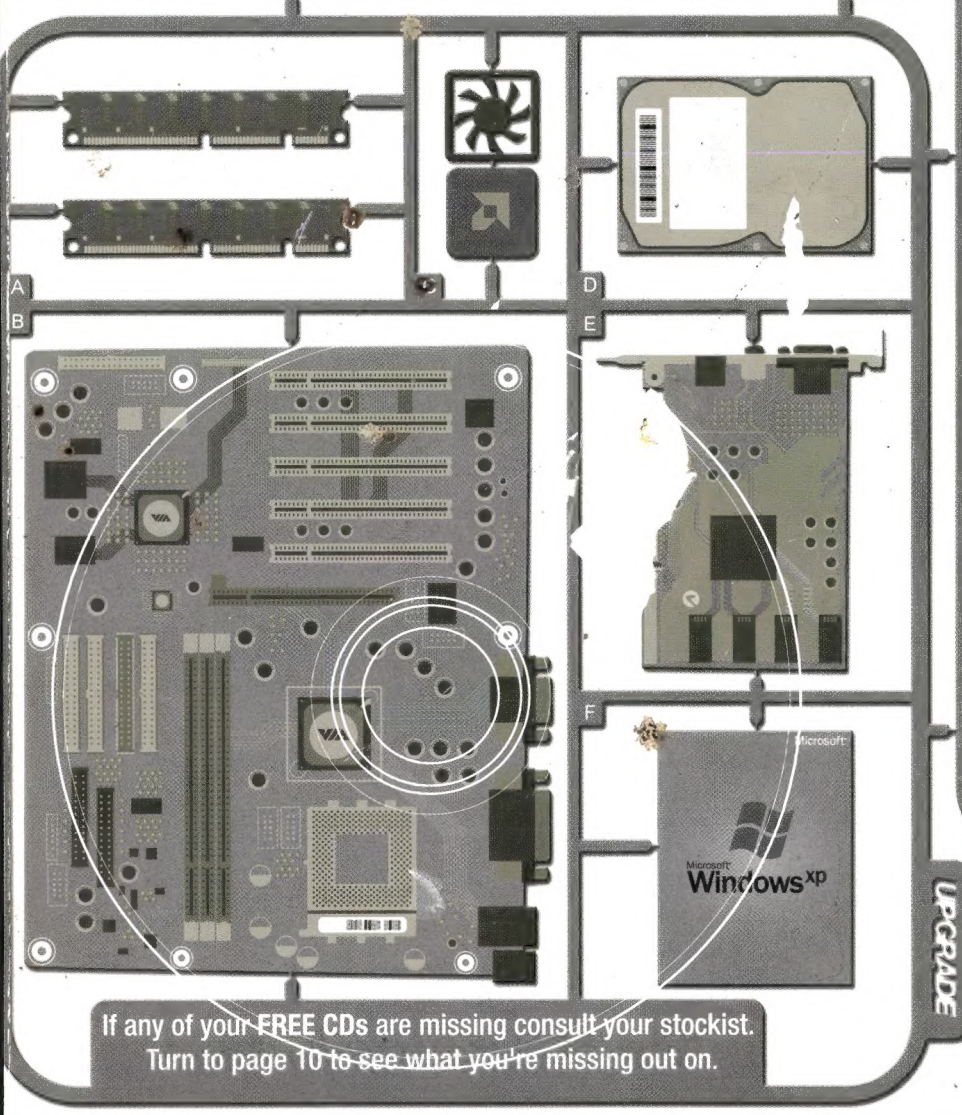


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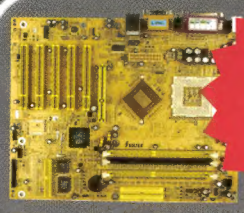

38 MOBOs ON TEST

### Motherboard mania
We make sense of all the latest chipsets – massive Labs test p62

### Easy money
Best accounting software found p48

### Man vs machine
History of AI and chess p96

### Linux networking
How to make Windows and Linux get along on your network p114

### Worst case scenario
How to recover your lost data p144

### To spam or not . . .
Dos and don'ts of email marketing p127

### GeForce FX vs Radeon
3D kicks it up a notch p16

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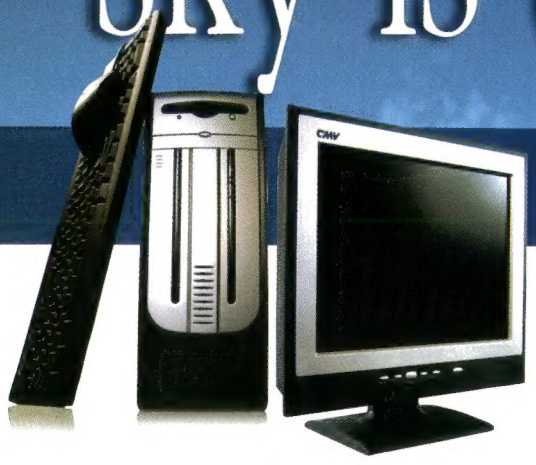

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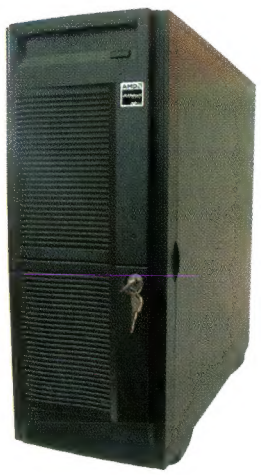


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# contents

## COVER 86

Want to breathe new life into your old PC? We've taken three PCs from 2000, 2001 and 2002 and done some resurrecting.

## REVIEWS 34

### PCs AND NOTEBOOKS

Hi-Grade Xperion .....36
Athlon XP 3200+ .....37
Pioneer Dream PC .....37
Toshiba Tecra S1 .....40
Dell Latitude D800 .....40
Pioneer D400S .....41

### PERIPHERALS

Viewsonic AirPanel V110 .....42
Canon MV650i DV .....42
HP PhotoSmart 1200 .....47
Deltron Cinema Disk .....47

### SOFTWARE

MYOB Business Basics .....48
QuickBooks Pro .....48
BusinessBreeze .....49
Corel Designer 10 .....51
Macromedia Freehand MX .....54
HardKey EG/Pro .....56
eTrust AntiVirus V7 .....59
Creo Six Degrees 1.51 .....59

## LABS 62

### MOTHERBOARDS

#### ARTICLES

Feature table .....64
Performance Analysis .....66
Bye BIOS! .....72

#### CHIPSETS

Intel E7205 .....84
Intel 845PE .....73
Intel 865 .....74
Intel 865G .....74
Intel 865PE .....74
Intel 875 .....81
Intel 875P .....81
NVIDIA nForce2 .....69
SiS648 .....84
SiS655 .....83
VIA KT400 .....68
VIA KT400A .....68

#### MOTHERBOARDS

ABIT BH7 .....73
ABIT IC7 .....81
ABIT IC7-G .....81
ABIT KD7-SL .....68
ABIT NF7-M .....69
ABIT SR7-8X .....84
Albatron Intel 865PE Pro II .....74
AOpen AX4C Max .....81
AOpen AX4SG Max .....74
Asus A7N8X Deluxe .....69
Asus P4C800 Deluxe .....81
Asus P4G8X Deluxe .....84
Asus P4PE .....73
ECS Elitegroup L4IPEA2 .....73
ePoX 4PCA3 .....74
ePoX 4PDA2+ .....83
Gigabyte 7NNXP .....69
Gigabyte 7VAXPA Ultra .....68
Gigabyte 8KNXP Ultra .....83
Gigabyte 8PENXP .....77
Gigabyte SINXP1394 .....83
Leadtek WinFast K7NCR18G .....72
MSI 655 Max-FISR .....83
MSI K7N2 Delta-FISR .....72
MSI KT4A Ultra-FISR .....68
QDI P4I865PEA-6AFL .....77
QDI P4I865GMA-6AFL .....77
Shuttle AB48N .....73
Shuttle AB60RS .....77
Shuttle AK39N .....68
Shuttle MN31N .....72
Soltek 86MP-L .....77
Soltek SL-75FRN2-L .....72
Soltek SL-75MRN-L .....72
Soltek SL-85DR3-R .....74
Soltek SL-86SPE-L .....77
Soltek SL-KT400A-L .....69
TYAN Trinity S266AN .....84

## FEATURES 86

ULTIMATE UPGRADE KIT . . .86

Upgrading your PC is a tricky affair. The *PC Authority* Labs Team shows you how to give your PC a new lease on life.

MAN VS MACHINE .....96

**Davey Winder** explores the moves that brought artificial intelligence out of the labs and into the black and white world of popular science.

## HORIZONS 16

NEXT-GEN 3D CHIPS LOCK HORNS16

NVIDIA and ATI unleash their latest beasts into the fray.

MICROSOFT FUNKS IT UP .....17

Microsoft shows off more details about its sexy new Windows.

MIXED BAG OF APPLES FOR iTUNES . 17

Apple's new online store has enjoyed yet paid for its success.

E3 SHOW REPORT.....18

E3 brings another fresh batch of gaming and hardware goodness.

OPENBSD LOSES FUNDING.....18

US government pulls funding on security-obsessed Unix operating system.

NEWS ANALYSIS.....19

Should Linux restrict the use of DRM? **David Kidd** looks at the hypocrisy.

AUSTRALIAN PC AUTHORITY

JULY 2003
ISSUE #68
www.pcauthority.com.au

## REGULARS

CD CONTENTS .....10

This month we have a bonus 3rd CD, Microsoft Word 2000 training suite, a trial of MYOB Business-Basics and much, much more!

WRITE ON .....24

Let us know your thoughts and experiences, and you could win great prizes.

A-LIST AND UPGRADE GUIDE ..28

The best products receive awards. But only the best of the best products manage to secure a spot in *PC Authority's* A-List.

END .....160

Have a laugh at technology, and maybe win some great prizes.

## LEISURE 154

Delta Force: Black Hawk Down ..... 154
V8 Supercars Australia: Race Driver . 155
CM4: Championship Manager ..... 155
Medieval Total War: Viking Invasion . 156
1503 A.D. The New World ..... 156
Vietcong ..... 156
Will Rock ..... 156

## REAL WORLD COMPUTING

ADVANCED WINDOWS .....103

Hoping his crystal ball is in working order, **Jon Honeyball** looks at what could be the next Big Thing.

PUBLISHING & GRAPHICS .....109

**Tom Arah** looks at the full range of add-ons available for Illustrator 10.

LINUX .....114

**Mike MacCana** loads up on hash and examines some suspicious packages, along with the differences between server operating systems.

MULTIMEDIA/AUDIO .....121

Today's portable PCs have more computing power than ever. **Brian Heywood** shows how you can use it.

## MIND YOUR BUSINESS

MARKETING OR SPAM?.....127

**Jane Dudman** and **David Hellaby** reveal how new legislation, anti-spam groups and general apathy could strip away the potential of email marketing.

## COLUMNS

LOGIN .....12
It's been a big month in the Labs, but **Tim Dean** reckons it's paid off.

DIALOG .....15
Notebook in hand, **Valens Quinn** braves a surly waitress and enters an Internet Hotspot.

## TECH SUPPORT

QUESTIONS & ANSWERS .138

**David Moss** contemplates hibernation after resolving a few PDF woes

HOW TO: DATA RECOVERY 144

**Ashton Mills** shows you how to bring your lost data back from the dead.

HOW TO: EXCEL WEB QUERY .131

**David Hellaby** shows you how to tailor your spreadsheets with Excel's little known Web importer.

JARGON BUSTER: PRINTERS .135

Confused by all the technical terms thrown around in the computer world? **Nirmal Chandrasena** helps you cut through the jargon with our monthly glossary.

## SUBSCRIPTIONS 26,136

Get on board and subscribe to PC Authority! Subscribe this month to get your free copy of Trainz. Design, plan and drive your trains through custom worlds. Worth $69.95!

# ON THE CDs

# JULY 2003 ISSUE #68

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This month, *PC Authority* and Intuit are pleased to offer you a special demo CD version of Track-It! 5.0 – worth $132!

Track-It 5.0 allows you to fully audit and manage up to 10 PCs over a network, and can give you key upgrade advice based on the reports. You can also upgrade to a 100 PC audit version for the special price of $1,094.50, which also includes a copy of Crystal Reports 8.0!

**If your bonus CD is not on the cover of this month's issue, go to www.pcauthority.com.au to register and have your CD sent straight out.**

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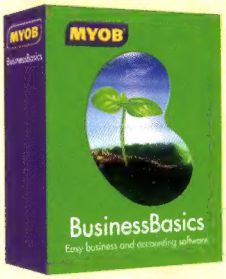


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**CONTACT:** MYOB Australia
www.myob.com.au

## UPGRADE TOOLKIT

Get the most out of your upgrades with these utilities.

- 3DMark03 Free Version
- AVG 6.0 Free Edition
- HDD Temperature 1.1
- Registry First Aid 3.0.1
- Spybot Search & Destroy 1.1
- Tweaking Toolbox XP 1.20
- ZoneAlarm 3.7.159
- WinBackup 1.73

## PC AUTHORITY COVER CD CONTENTS JULY 2003

**July 2003**
**DISC 1**
- MS Word 2000 – level 2 Training
- MYOB BusinessBasics

**Multimedia**
- Ashampoo Media Player+ 1.81
- Audacity 1.0.0
- Blaze Media Pro 4.10
- DivX Video 5.0.5
- DVD Region-Free 2.11
- eMusic Tag Editor 2.20
- FreeRip 2.30
- Microangelo 5.58
- Paint Shop Pro 8
- Photo2VCD Standard 3.08
- Photographers Power Toys 1.4
- QuickTime 6
- VCDEasy 1.1.5
- Winamp 2.91

**Internet Essentials**
- 1POPCheck 2.3
- Advanced Instant Messengers Password Recovery 1.8
- AOL Instant Messenger 5.1
- AutoRead 1.1.0.32
- Copernic Agent Basic
- Crazy Browser 1.05
- Email Effects 1.6.9
- Email Templates 4.0
- Eudora 5.2.1
- Google Toolbar
- ICQ Lite build #1150
- ICQ Plus 3.5
- ICQ Pro 2003a #3800
- Internet Download Manager 3.14
- Junk URL
- MailWasher Free
- MSN Messenger 5.0
- Netscape 7.02
- Odigo 4.0
- Opera 7.11 with Java
- Popcorn 1.36
- Trellian FTP
- Trellian WebPAGE
- Trillian 0.74
- WebFerret 5.0
- WinMHT 1.3
- WS-FTP LE 5.0.8

**Patches/Updates**
- ATI Catalyst 3.2 driver suite
- AVG 6.0 Free Edition Updates
- DNAML e-book plugin
- McAfee VirusScan SuperDAT file
- NetObjects Fusion MX 6.20 Update
- Norton AntiVirus definitions update
- NVIDIA Windows 2000/XP display drivers
- VIA Hyperion 4in1 drivers v4.46

**DISC 2**
**Games**
- BloodRayne demo
- Galactic Civilizations demo
- Ultimate Trainz Collection demo

**Upgrade Toolkit**
- 12Ghosts Shredder 6.2
- 3DMark03 Free Version
- AVG 6.0 Free Edition
- Cacheman 5.11
- Darik's Boot and Nuke
- Fresh UI 5.6
- HDD Temperature 1.1
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- Registry First Aid 3.0.1
- Spybot Search & Destroy 1.1
- Tweaking Toolbox XP 1.20
- WinBackup 1.73
- WinSettings 5.2
- ZoneAlarm 3.7.159

**Windows Essentials**
- Acrobat Reader 5.1
- Easy Screen Capture 1.22
- EditPad Lite 4.5.4
- IrfanView 32 3.80
- Scribble-It Notes 3.1
- WordWeb 2.1
- Zip Genius 1.4 SR3

McAfee VirusScan 7.0

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# MOBO MADNESS

It's been a big month in the Labs, but it's all paid off in the end.

Motherboards. The Labs this month is absolutely filled to the brim with them. Not only do we have our massive motherboard Labs, but with all the testing needed for our upgrade feature, the Labs team have been knee deep in components all month. As such, we've hereby dubbed this month 'Australian International Month of the Mobo' in the Labs. Ahh, it all took me back to my Labs days of fiddling with SIMMs, DIMMs and RIMMs, probing BIOSes and hacking the registry to get stubborn drivers and benchmarks to work…

The upgrade feature was actually very interesting to watch unfold. As we took old systems and progressively upgraded them, even we were surprised at some of the results. It really goes to show that for a very reasonable outlay, you can add a good couple of years of life to your PC.

Another lesson that came from the upgrade feature, and a lesson I relearned for myself several weeks ago when I performed an upgrade at home, is the kinds of trouble you can get into when performing upgrades. These days the hardware is of such good quality that it is very rare to find a hardware incompatibility or to have a component fail, but the software side of things can still cause shenanigans. More often than not we found ourselves better off formatting and completely reinstalling Windows and updating all the drivers whenever adding a new component - especially if it's the

**'As such, we've hereby dubbed this month 'Australian International Month of the Mobo' in the Labs.'**

motherboard. Sometimes Windows can handle a mobo swap, but even now it's still a hit and miss affair. So before you do your mobo wrangling, be sure to back everything up, and be prepared to load a fresh copy of Windows from scratch (and activate it, if necessary).

Also, one reason we decided to run the motherboard Labs along side the upgrading feature is when it comes to deciding which mobo to use, there are so damn many chipsets at the moment, it becomes a bit of an exercise in research and jargon decryption. So we thought it would be great to have all the chipsets broken down in a single feature for reference. It took us 15 pages to get through them all, but the Labs gives a great snapshot of all the options around today.

Overall, this month, Darren, David, Dan and Nirmal have all put in a monumental effort bringing all these components and motherboards together – and worn a deep path in the AJB shag between the Labs and the editorial department in the process. And I don't know about you, but I love the work done by Stu and Phil with the model kit illustrations too.

Finally, the *PC Authority* Website has been undergoing a process of evolution over the last few months, and new features are being added all the time. If you haven't dropped by for a while, check out www.pcauthority.com.au and see what's new.

**Tim Dean, Editor – tdean@pcauthority.com.au**

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ADVERTISING INDEX

Abit ..... 100
Acer ..... 22-23, 29-33
Achieva Technology ..... 58
Altech Computers ..... 115
American Power Conversion ..... 57
AMI Computers ..... 116
AOC ..... 148
ASI Solutions ..... 126
BCN Technology ..... 13
BenQ ..... 133, 139, 141, 143, 145
Beyond Computers ..... 147
Bluechip Infotech ..... 102
Canon ..... 44-45, 162
Canopus ..... 85
Corel ..... 113
Cornea ..... 41
Creative Labs ..... 92
Dell ..... 2, 3, 4, 5
Digicor ..... 50
D-Link ..... 52-53
Emagen ..... 122
Epox ..... 120
EPSON ..... 161
Fortune Tec ..... 125
Gigabyte Technology ..... 82
Harvey Norman ..... 75
Hi-Grade/QD Innovative Computer ..... 76, 78-79
HP ..... 20
In Learning ..... 140
Kodak ..... 91
Linksys ..... 19
Manaccom ..... 49
MCT Computers ..... 135
MicroStar International ..... 95, 119
Mitsubishi ..... 99
ModTech ..... 132
NEC ..... 104
Netgear ..... 108
Ocean Office Automation ..... 70-71
Opti Australia ..... 130
PC Club ..... 4, 7
PC Direct ..... 107
Pioneer International ..... 14
Protac ..... 43, 80
Quicken ..... 129
Samsung ..... 11, 46
Silicon Memory ..... 60-61
Sony ..... 24
Success Storm ..... 151
Toshiba ..... 38-39
Twinhead ..... 110

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MS Windows XP Professional

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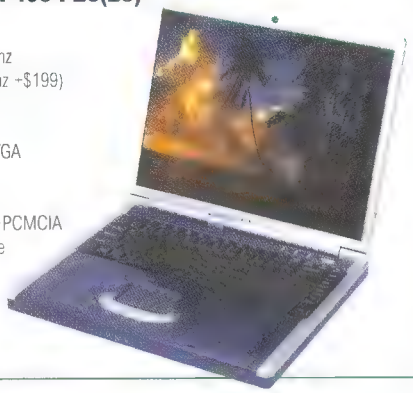

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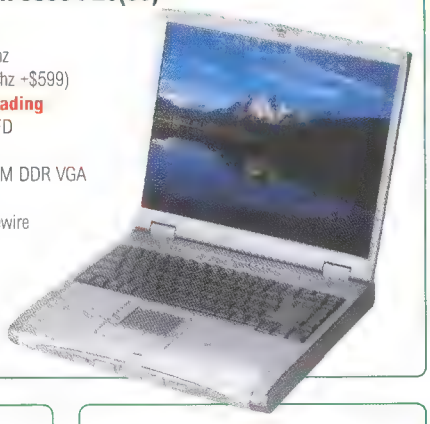

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1394 Firewire, TV Out
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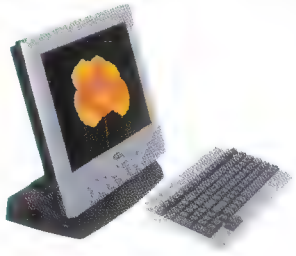

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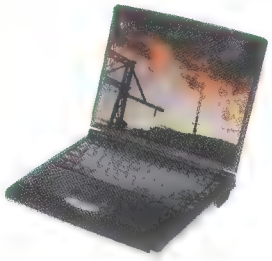

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# COFFEE AND A SLICE OF INTERNET

Notebook in hand, **Valens Quinn** braves a surly waitress and enters an Internet Hotspot.

So I said to the waitress 'can we order some food and get on to the Internet?' She responded with a vapid stare and said she'd send her manager over. A few minutes later her manager appeared saying she remembered some technicians skulking around the café a few weeks ago. That was about the same time they put the Intel Centrino 'Wireless Internet Access Here' sign beneath their outdoor menu, but as for using it, she though you just 'got on'. And that was it. No colourful step-by-step guides, no photocopied 'how to'. My first visit to a Hotspot was beginning to look rather chilly.

And this was the reason why I was sitting in Place Café in the MLC centre in Sydney's CBD. While there's been a lot of hyperbole about the benefits of Hotspots, I hadn't heard any actual accounts from users who'd tried it. With the help of Keith Rothsay, Toshiba's Pre Sales Technical Support Specialist, a Toshiba Portégé R100, Portégé 3500 and Tecra M1, I was confident that we'd be able to hit a few Hotspots and live to tell about it.

Fortunately it wasn't too difficult to find a place to try it out; around 200 shopping centres, cafés, restaurants, hotels and airport lounges already provide wireless access. All made possible by four wireless Internet service providers (WISPS) – Optus, Telstra, Azure Wireless and Xone. While SkyNetGlobal pioneered public wireless access in Australia, it recently sold its network assets to Telstra – a good indication that we'll see more Hotspots to come. At last count there are more Hotspots in Melbourne; find out exactly where they are from Intel's Website at www.intel.com/apac/eng/products/mobiletechnology/hotspots/finder.htm.

Back at the Place Café, Keith managed to get things rolling. When we entered, our 802.11b (Wi-Fi) equipped notebooks automatically detected the presence of an Optus wireless network. What we didn't understand was how to gain access to the Internet from this connection. Did we need a password from someone at the café? Was there an Optus kiosk in the MLC centre that we needed to visit? After a few minutes, Keith noticed his Internet Explorer browser had automatically redirected to an Optus logon page. It was as simple as that. Walk in, select the wireless network you want and your browser will direct you to a logon page of the service provider. I opened an account with Optus, gave my credit card details and I was surfing the net. It cost me $13.20 for a one-off account fee and $12.10 per hour.

As for transfer speeds, remember that this is an 11Mb/s network, so I was enjoying near-instant Web page browsing. I also downloaded a 26MB file from the Toshiba Website, which took around 19 minutes.

Conscious of the other patrons stares, I took my notebook for a walk to see how far I could go without losing a connection. I managed to get out onto Pitt Street – about 40 meters from the cafe – before it disconnected. When I came back into the café, I was redirected to the Optus login page and browsing began again. Simple.

After the café, I wanted to try another service provider. I'd heard that DefiFrance has Hotspots, so notebook bags over shoulders, we headed to the QVB. Interestingly, when we found the DeliFrance shop, the 'Wireless Internet Access Here' sign was only just noticeable. Still, after sitting at a table, Windows XP detected an Optus wireless network. After entering my password, we were back online. Keen to try another provider we decided not to stay long at DeliFrance. I did feel guilty about dropping in, using a table to get online and leaving without buying a thing. I'm sure that shops with Hotspots will find a way to deal with the likes of us 'surf and run' types in due course.

**'It was as simple as that. Walk in, select the wireless network you want and your browser will direct you to a logon page of the service provider.'**

The next place I visited was the Greenwood Plaza in North Sydney. It's completely covered by an Xone wireless network. Upon entering, the same thing happened – XP detected a Xone wireless network, allowed me to select it, and I then opened my browser which automatically directed me to the Xone login page. I created an account with Xone – this time thankfully without a sign-in fee, and purchased $10 worth of credits, which bought about an hour of online time. Browsing speeds were simply excellent, and I downloaded the same 26MB file in just seven minutes while window shopping throughout the plaza. I particularly enjoyed surfing the Net on a bench across from an Internet Kiosk. What surprised me most about my little experiment was how easy it is to use a Hotspot. Provided that you have a notebook equipped with an Intel Centrino processor or a 802.11b capable wireless network card and Windows XP, it should be easy. While you can use other operating systems, you'll have to have wireless networking support installed.

Starting as cynics, both Keith and I were very impressed by our experience. I could genuinely see myself using Hotspots in the future when I need Internet access away from the office. But of course, owning a notebook is the first step to increasing your productivity. With the help of Toshiba, in next month's *PC Authority* magazine we'll be putting together a guide that will not only bring you up to speed on the latest wireless network capable notebooks, it will show you how you can save thousands of dollars on your notebook purchase, explain how to best insure your asset and safeguard your data. In addition, we'll compare the costs and advantages of connecting by Hotspots versus other mobile networks. It's a great tool for justifying a new notebook, so be sure to show it to your boss!

Send your comments to:
**vquinn@pcauthority.com.au**

# HORIZONS

*PC Authority* seeks out all the latest news in the world of technology, from local trends to global breakthroughs.

## NEXT-GEN 3D CHIPS LOCK HORNS

NVIDIA and ATI unleash their latest beasts into the fray.

NVIDIA and ATI have both upped the ante in the consumer 3D graphics stakes, and are both pushing the platform of bringing the same photo-realistic imagery found in cinema, with films like *Lord of the Rings* and *The Matrix*, to your home PC.

NVIDIA's offering, the new GeForce FX line, is based on the NV35 GPU, and replaces the first generation of the GeForce FX family, the NV30. Three new cards are bing released with the NV35: GeForce FX 5900, with the complete feature set and 256MB of DDR RAM, for the enthusiast market; GeForce FX 5600 (NV31), with a slightly cut down feature set and less memory for the mainstream market; and the GeForce FX 5200 (NV34) with a minimal features set for the entry-level market.

All NV35 chips are manufactured using a 0.13-micron process at TSMC, indicating a move back to TSMC from IBM, who NVIDIA turned to earlier this year when TSMC's 0.13-micron fabrication process delivered very low yields.

The NV35 is an entirely different chip from the NV30, and incorporates a number of significant new features, including a 256-bit memory interface, which brings it up to speed with ATI's earlier Radeon cards. It also sports NVIDIA's CineFX technology, which incorporates full DirectX support with pixel shader 2.0+ and vertex shader 2.0+. New image quality features are Intellisample, which encompasses a number of improved techniques of dealing with colour, lighting and anti-aliasing, and UltraShadow, which is a new way to generate realistic shadow effects.

The new FX range brings real-time cinema-quality realism to the PC

These features are all good and well, and represent some very impressive technology, although it will be some time before many of the features are supported in games. Doom III will sport some new DirectX 9 features, although it could well be 2004 before the majority of games utilise them.

ATI's new Radeon 9800 Pro also sports up to 256MB of DDR memory, a 256-bit memory interface, ATI's DirectX 9.0 compatible Smartshader 2.1 for pixel and vertex shaders, and Smoothvision 2.1, featuring improved anti-aliasing and anisotropic filtering techniques.

Review samples of the new GeForce FX and Radeon cards are on their way to the *PC Authority* Labs, so expect full benchmarks and in depth analysis of all the features next issue.

www.nvidia.com
www.ati.com

### 3D SPEC LIST

| GPU | GEFORCE FX 5900 | GEFORCE FX 5600 | GEFORCE FX 5200 | RADEON 9800 PRO |
|---|---|---|---|---|
| CORE SPEED | 450MHz | 350MHz | 325MHz | 380MHz |
| PROCESS | 0.13µ | 0.13µ | 0.15µ | 0.15µ |
| RAM SPEED | 425MHz | 350MHz | 325MHz | 340MHz DDR |
| MEMORY INTERFACE | 256-bit | 128-bit | 128-bit | 256-bit |
| MAXIMUM RAM | 256MB | 256MB | 128MB | 256MB |
| RAMDAC | Dual 400MHz | Dual 400MHz | Dual 350MHz | Dual 400MHz |
| AGP | 8X | 8X | 8X | 8X |
| VERTEX SHADERS | 2.0+ | 2.0+ | 2.0+ | 2.0 |
| PIXEL SHADERS | 2.0+ | 2.0+ | 2.0+ | 2.0 |
| PIXELS/CLOCK | 8 | 4 | 4 | 8 |

The new GeForceFX features 256MB DDR RAM and a speedy 450MHz core.

# MICROSOFT FUNKS IT UP

Microsoft shows off more details about its sexy new Windows.

This year's WinHEC (Windows Hardware Engineering Conference) has revealed more features of the upcoming Windows version, Longhorn. The new operating system will feature better support for CD and DVD, a 3D-enhanced user interface and full implementation of digital rights management.

No, it's not a Mac - HP's Athens PC running Microsoft's upcoming Longhorn release.

The look and feel of Windows has been given a huge overhaul, drawing inevitable comparisons to Apple's Mac OS X. The interface will take full use of 3D acceleration to add better scalability and smooth transitions, similar to Apple's 3D enhanced Quartz technology, although so far the enhanced effects have only been performed on Windows XP. The UI will also feature multiple tiers, giving the user the option of scaling down the 3D effects depending on the level of hardware sophistication.

Still in its concept stage at the moment, Bill Gates's keynote presentation also showed off HP's latest prototype creation, Athens, running the new operating system. Like Longhorn's 3D rendering, the Athens PC is also guilty of encouraging Mac comparisons, featuring a large 23-inch widescreen display and funky design. On top of that, it goes further than the latest iMacs with a fully wireless keyboard and mouse set up, and a multimedia remote.

Other Longhorn features include support for all DVD writing formats which allow straight-to-disc burning and a new 15-minute install method for loading default Windows installations onto any hardware configuration.

www.microsoft.com

# MIXED BAG OF APPLES FOR ITUNES

Apple's new online store has enjoyed yet paid for its success in its opening month.

Apple's new online music store has successfully bridged the gap between subscription services and the Wild West world of file-sharing, racking up a million downloads in its first week. The service allows users to download songs from a growing selection of around 200,000 songs from Sony, Warner, EMI, BMG and Universal, but an already bumpy ride might make them think twice.

Unlike other music download services no subscription fee is required and each track costs US$0.99, or US$9.99 for a full album. The tracks, which can only be downloaded through Apple's iTunes music software can then be ported to an iPod, burnt an unlimited amount of times and played on anywhere up to three Macs.

Although it's take up has been substantial amongst the relatively small Mac community reports of piracy threaten to taint the service. Although relatively benign, the hacks take advantage of Apple's streaming application. Each song can legally be streamed to another system, as long as it doesn't transfer the track. It didn't take long for hacks to appear that enable users to play the tracks over the Internet and then devise a way to capture the stream.

Apple's music store: two million downloads in 16 days.

The true test however will come when it leaves its Mac-only sandbox to be released into the big bad world of Windows PCs by the end of the year.

www.apple.com

## Linux fans bite

www.sco.com

## Apple boosts iPOD

www.apple.com

## Intel arrested

www.freemikehawash.org

## Palm up

www.palmsource.com

## Google News OZ-style

http://news.google.com.au

## TOP FIVE SITES

Each week PC Authority brings you the top five sites visited by Australians in various categories.

| | |
|---|---|
| www.google.com.au | 51.70% |
| au.yahoo.com | 17.81% |
| search.ninemsn.com.au | 13.44% |
| au.altavista.com | 3.72% |
| www.whitepages.com.au | 2.84% |

| | |
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| ninemsn.com.au | 52.80% |
| www.[illegible] | [illegible] |
| news.ninemsn.com.au | [illegible] |
| www.[illegible] | [illegible] |
| www.[illegible] | [illegible] |

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| www.bom.gov.au | 13.64% |
| www.jobsearch.gov.au | 7.38% |
| www.[illegible] | [illegible] |
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| www.afl.com.au | 10.20% |
| www.theworldgame.com.au | 6.78% |
| www.nrl.com.au | 3.61% |
| www.foxsports.com.au | 2.99% |
| www.[illegible] | [illegible] |

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| www.imdb.com | 8.94% |
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| www.ezyfilm.com.au | 2.62% |

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| www.cpaaustralia.com.au | 20.02% |
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# E3 SHOW REPORT

E3 brings another fresh batch of gaming and hardware goodness.

Games are now big business, with revenue exceeding that of the Hollywood film industry, and this years E3 exhibition in Los Angeles was a celebration of this newfound excess.

Previous years were dominated by the battle of Sony, Microsoft and Nintendo's consoles, but 2003 is the year of portable gaming, with the continued dominance of Nintendo's GameBoy Advance and the expected showing of Nokia's N-Gage mobile phone and Sony's PlayStation Portable (PSP).

Technically, the event was dominated by a significant paradigm shift in PC gaming. For years game engines have constantly lagged behind the hardware developments by a noticeable margin, but this year was dominated by the use of the advanced shading functions that debuted with the GeForce3 and RADEON 8500, and are now standard hardware features. This is likely to drive a hardware upturn as gamers want to play the latest games with the best looks.

It was Valve's Half-Life 2 that dominated the games on show, thanks to an in depth demo by lead developer Gabe Newell, and was the hottest ticket in LA. Where the original Half-Life redefined how we look at in game AI, Half-Life 2 is set to change forever how physics are integrated into games when it is released on the 30th of September this year.

Valve's Half-Life 2 stole the show with its photo-realistic graphics and real-world physics.

www.e3expo.com

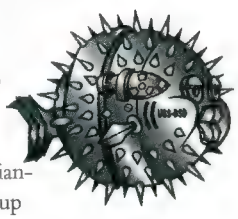
# OPENBSD LOSES FUNDING, DOESN'T KNOW WHY

US government pulls funding on security-obsessed Unix operating system.

After a year and a half of government support the OpenBSD project has lost its US$2m cash injection.

DARPA (Defense Advanced Research Projects Agency), is largely held responsible for the creation of the Internet and has withdrawn its support for the open source Unix variant, OpenBSD. The operating system initially gained the support of the US Department of Defense due to its single-minded goal of producing the world's most secure operating system.

DARPA's official line is that the funding was cancelled 'due to world events and the evolving threat posed by increasingly capable nation-states'. There is some speculation, however, that the funding was pulled due to negative comments made by OpenBSD project leader, Theo de Raadt about the US military and the war in Iraq.



What's most likely to be the case is that the controversial funding, funnelled to the Canadian-based development group (US laws restrict the export and use of cryptographic tools) through the University of Pennsylvania was cut as DARPA could not continue to fund foreign-based projects.

The cut, however, is unlikely to cease development on the project which had been successfully raising funds for several years prior to DARPA's grant. The team has just announced OpenBSD 3.3 and currently the operating system has reported only one security hole off the default configuration since the project began. You can download the latest version free or for a small fee buy a copy burned on CD.

www.openbsd.org

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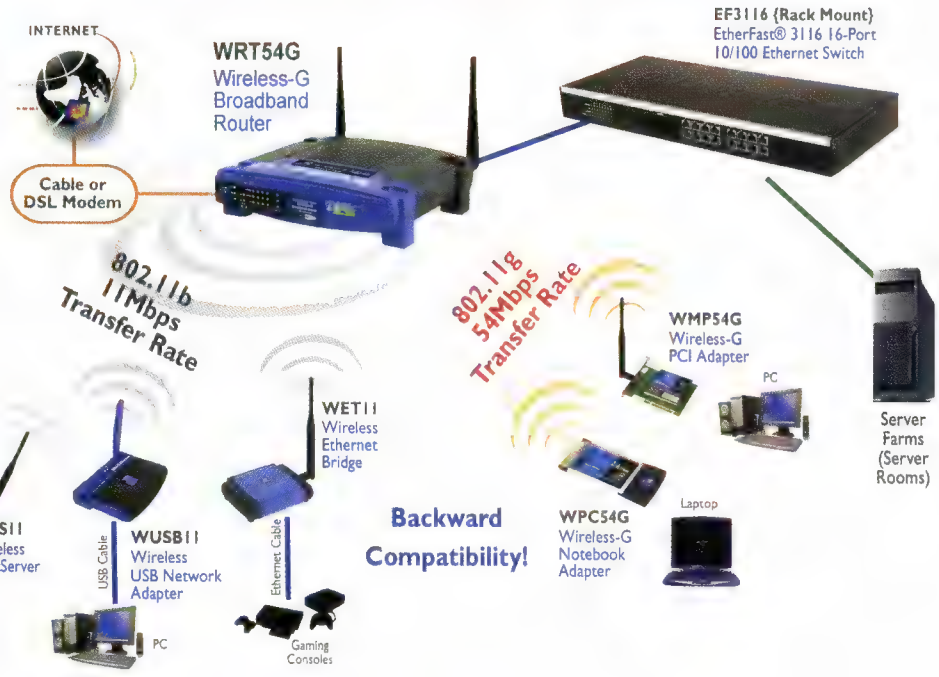


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- Advanced wireless security with WEP encryption, and MAC filtering

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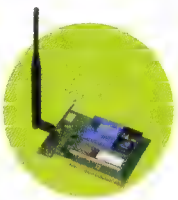
- Also interoperates with Wireless-B networks (at 11Mbps)
- Advanced wireless security with WEP encryption, and MAC filtering



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MDHEP 5444/PC

# IT'S FREE BUT...

Should Linux restrict the use of DRM? **David Kidd** looks at the hypocrisy.

Within the next few years, digital rights management (DRM) is going to burst out of a John Hurt-like chest cavity, run across the table, and disappear into the walls.

Like most of *Alien's* Nostromo crew, there's going to be very little we can do about it. We'll know it's there, running around, but we won't see it until it's tearing us apart with a little mini alien head shooting out of its mouth.

Or so a large, vocal portion of the Open Source community thinks. But the real question they're asking is: where's Ripley? Someone has to blast this thing out of the airlock before it reaches Earth, right Linus? Linus?

Linux creator Linus Torvalds, previously absent from the debate, has actually gone and done the opposite. He's given DRM the green light, and although he doesn't support it, he's announced that he wants to 'make it clear that DRM is perfectly ok with Linux!'

According to a controversial post he made this month to the Linux Kernel mailing list, he wants to avoid the moral issues of DRM and focus on creating the perfect OS. 'I'm an "Oppenheimer", and I refuse to play politics with Linux,' says Torvalds, 'I think you can use Linux for whatever you want to – which very much includes things I don't necessarily personally approve of.'

While I think that his comparison to atom bomb researcher Oppenheimer is inappropriate, as this was the same person who later expressed regret over his work, Torvalds' sentiment is still valid. His goal for Linux, as a technical person, is that it becomes the most capable OS out there, not a playing field for a DRM debate. But not everyone feels this way. So what's the problem?

DRM is the general term for implementing measures to control how software and data are used, for example, like preventing MP3s being copied, or securing your financial details at your local bank. For DRM to be effective it needs to be implemented in the OS, as well as hardware, preventing users getting around simple, application-specific measures.

So it's not hard to see that a community of people united under the notion of free access are feeling threatened. Open Source software advocates are familiar with what they see as something that restricts their freedom to create, improve and distribute good software and DRM is potentially their worst nightmare.

To stop this, many kernel contributors have been suggesting restrictions on DRM at the kernel level by changing policies on how the technology is used. And doesn't the GPL (the distribution license for Linux) say something about embedding keys into the kernel anyway? DRM can't legally be used, right?

Well, firstly GPL is a social and legal issue, not technical so it's best to deal with that elsewhere. In any case, you can't really embed anything in the kernel because you need to distribute the source code – expect some nasty legal cases about this in the future. The kernel restriction is the real meat, and it's on this absurd point that I agree with Torvalds. It's one thing to speak out about the potential draconian uses of DRM, but to limit legitimate use is, well, a lot like DRM.

Linux is supposed to provide a free platform with only one restriction: you must redistribute the source code. As an OS, developers and users are free to do what they want with it and it's this same freedom that provides the momentum for the Open Source movement.

These same freedoms should be extended to users, businesses and governments for the purpose of protecting their own information. This isn't at odds with the GPL and conforms to the original intent of the operation system – to provide a flexible, stable and robust platform.

At its core, it involves imposing limits on what runs on Linux which is as ridiculous as restricting proprietary software from running on it. It's this mentality that is far more offensive to the freedom the Open Source movement has provided than DRM could ever be.

It's not an exclusive club, let's face it, Linux doesn't need any more reasons for people to choose another platform.

### WHAT DO YOU THINK?

Do you think that Linux should remain free of DRM? Email me at ***dkidd@pcauthority.com.au.***

## In your Dreams

In a market where only two products have ever succeeded at any given time, it seems that the games console market is already locked. But a new contender has entered the ring and this one looks to be good for us. The BBC recently [illegible] Linux on Sun Systems Corporation and be able to run [illegible] PC games straight off the CD or over the network – thereby solving the problem of finding someone to produce games for it. It's unlikely, but would be a massive boon to PC game sales as well as the many users already [illegible] machines. But the PC gamers [illegible] this to be long-term? PC games are made for PC for a reason and while this might seem like the ultimate union between console and PC, it's more likely to be one of the extremes.

http://www.gameconsole.tv/home.htm

## Linux gets trailers

Compared to the [illegible] support in the video player sector, Linux has had a much harder time on the desktop. That's partly due to the competition being more than adequate for most users' needs and the missing links that are hard to patch up. One of these is support for Version 2 encoding which is used in Apple's QuickTime video and is up for [illegible] Linux users for some time. In reality, this just means you can watch movie trailers on your Linux system, but by making [illegible] this one, however small, is what Linux desperately needs to gain any kind of foothold on the desktop.

http://xine.sourceforge.net

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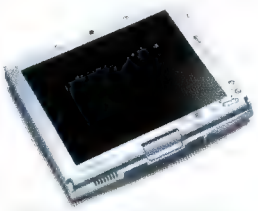

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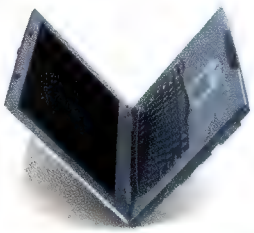

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^^Wireless connectivity and some features may require you to purchase additional software, services or external hardware. Availability of public wireless LAN access points limited. As measured by MobileMark 2002. System performance, battery life, wireless performance and functionality will vary depending on your specific hardware and software configurations. **Terms and conditions apply - warranty locations also available on website. See www.acer.com.au for full details. ††Gartner Dataquest Quarterly Statistics Program March 2003. †Valid until 9 July 2003 or while stocks last. *Rental amounts shown are indicative and based upon a 36-month rental contract and rates at time of publication; all state and federal government charges (Stamp Duty & GST) included. Rental figures quoted are for business use only and require a minimum purchase of $2000 ex GST. All rentals are subject to credit approval. Provided by Acer Finance Australia Pty Ltd. Individual dealers may offer alternative financing options.

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# WRITE ON

Got something to say? If you have a good story, an amusing anecdote or a tale of woe, we want to hear from you. The pick of the post could win a fantastic prize.

## Pixel hunt

I think you've missed an important feature in your LCD Labs test (*May, 2003*).

I haven't bought an LCD monitor yet because I do not like the idea of spending around $1,000 and ending up with dead pixels making the next five or so years of my life miserable.

Recently I found out that there are LCD monitors on the Australian market with 'zero dead pixel' warranty – ViewSonic models VA520 and VA720, and quite a few Philips B and P models.

I would think that 'zero dead pixel warranty' would be a very important factor for people buying an expensive LCD panel. In light of this, I was hoping that you would include the above panels in your test and as we all know, you did not. Very disappointing.

Is there a chance that you could do a follow up, specifically for this category of panels? This issue is important and I believe that many potential LCD buyers would be grateful for this.

**J Franek**

**Darren Ellis replies:**

This is a very important point, but also an absolute nightmare for the Labs team. The problem was that a 'no dead pixel' policy depended totally how that company defines a dead pixel. And each manufacturer defines this differently. Some manufacturers that claim no dead pixels actually mean that you can have heaps of dead sub-pixels, and therefore have plenty of purple, yellow or blue dots all over your screen.

We didn't list the specs because it was worthless to rank two panels side-by-side both with a five dead pixel replacement guarantee when different classifications mean very different replacement policies. And since the manufacturers themselves couldn't even explain their *own* policies you can imagine the problem that 27 different manufacturers represented for us.

## Real world lost?

I've been a subscriber to *PC Authority* for three years and have watched the magazine grow and change, not necessarily for the best. Over the last year I have watched the slow crumbling of the Real World Computing section at the rear of the magazine as one by one the sections have disappeared.

Some, like Web Business are really no longer relevant (hands up those who know someone who has actually been able to make money off the Web?), while others such as Online, Back Office & Networks have disappeared without a trace, leaving only three sections that were among ten or more only a year or so ago.

Other sections have been added in this time but they do not make up for what has been lost.

Tech Support is a welcome addition and is always helpful, Mind Your Business would certainly appeal to many and Linux has been great from day one.

Even though I believe that PCA has made a mistake by losing RWC I will continue to subscribe because it is still ahead of many of the competition.

**J O'Keeffe**

**Tim Dean replies:**

We had to make some space for new sections like Tech Support and Mind Your Business, but I think you'll agree that the new sections are working out well.

You'll be glad to know, though, that we miss RWC too, so we're planning to include more columns in future months.

## Open Source? Bah!

Sometimes you've got to agree that Microsoft is just trying to squeeze as much

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**STAR LETTER PRIZE**

money as possible from us, but Open Source? Don't make me laugh. . . Microsoft has a right to keep its king code away from people who would make as many versions of Windows as Linux has. One reason many people use Windows is that there is only one Windows. Linux has so many versions and types that nobody knows what to choose! I myself think that Windows XP is an excellent OS that is very stable and reliable.
**N Crouch**

**David Kidd replies:**
One of the most prohibitive aspects of Linux's uptake on the desktop is the confusing array of distributions which are often not compatible with each other. Although this makes it hard for developers and users, taking this away would remove its strength in being an adaptable, robust and above all, open platform.

## Palmed off

I've been using a Hewlett-Packard Jornada Pocket PC for a couple of years now and have been very pleased with it until I lost my stylus.

I couldn't find a replacement in shops so I rang Hewlett-Packard and was told it was $11 for a replacement. Plus $12 freight to ship it from Melbourne to Perth. Plus GST. The grand total for a 5cm piece of black plastic was $25. They're not available in the shops for mysterious reasons, but I'm sure I'm not the only person who's lost a stylus.

Now, it's not that I can't afford $25, but that just seems an outrageous price to me. I mean, honestly, $11 for a bit of plastic? And how is it getting from Melbourne to Perth costs $12 for something that weighs a few grams?

This may seem like a big fuss about a small issue, but if I were running Hewlett-Packard/Compaq, I would have thought a satisfied customer who might come back and buy another Pocket PC would be worth the cost of a stylus. Or at least, I'd have them stocked in outlets that sell Pocket PCs. It'll be a Palm for me next time.
**D Blythe**

## Not clear cut

S Rice (Star Letter, *June 2003*) made a good point about technology controlling us. My opinion, at least in some areas, is a little different.

Regarding his example which suggests that if 56K connection was the fastest you wouldn't want faster, I disagree. If you had a 56K connection, someone would hook two modems up to get a 112K connection. It's proven in the graphic cards and CPU areas – if someone buys the fastest chip speed, someone somewhere overclocks it to go even faster. This then spurs technology to produce faster chips as it would seem people want them.

And 13-year olds DO care about technology. I know that if I were 13 then yes I wouldn't care if the next MP3 player had a longer battery but if a better audio compression was found, I'd want that so I could carry MORE music.

It isn't such a clear cut question as he seems to make it, as some aspects of technology are just done because they can, and others for real gain.
**S Williams**

## No means no

Tim Dean hit it on the head when writing about 'No junk mail' in his Weblog (www.pcauthority.com.au/index.asp?PageType=ArticleDetail&CatID=9&ID=13278). He's right about the .au addresses – I get more spam promoting American things than anything else. I mean, do I really want to get a mortgage from over there?

What gets me is how do these idiots make any money? None of their return addresses work so you can't reply even if you wanted to. Opt-outs don't appear to work on most occasions.

I did consider a spam filtering service online but then it turned out I had to give them access to my account. How could I trust them without knowing they would also abuse my email address? I also long for the days when 'No' means no and we don't have to receive rubbish if we don't want it!
**K Thomas**

**Tim Dean replies:**
Hear hear. And for more of our blogs, head to www.pcauthority.com.au

## Windows? No thanks

In our November, 2002 issue, we awarded T Young a prize for his excellent letter, Black Death.

His letter detailed his new found disdain for Microsoft, ending with the statement that he 'would not accept a Windows XP system if it was free [and would treat] further Microsoft products like the plague.' And our prize for that month?
A Microsoft prize pack.
Thanks to EverythingLinux (www.everythinglinux.com.au) we are happy to award T Young, with a boxed copy of SuSE 8.2 Professional, worth $178.

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# THE A-LIST

**Only the absolute best of the best make it on the A-List. Check out the Upgrade guide, telling you what spec to aim for when buying or upgrading your PC.**

## P4 MOTHERBOARD

### Gigabyte 8PENXP

**PRICE:** $582

**SUPPLIER:** Synnex

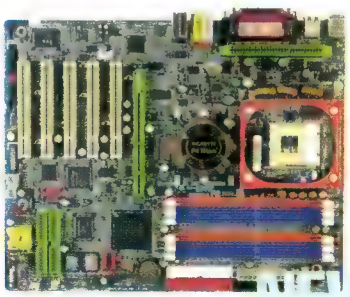
1300 880 038

**ISSUE:** Labs Winner, *July 2003, page 77*

You might be wondering why the Gigabyte 8PENXP costs $582. The short answer is it's features.

It has all of them

While this might seem expensive, it's still a lot cheaper than purchasing add-on cards, making it very good value.



## NOTEBOOK

### Dell Inspiron 8500

**PRICE:** $4,599

**SUPPLIER:** Dell

1300 303 275

**ISSUE:** Recommended, *April 2003, page 38*

The inclusion of a GeForce4 4200 Go sweetens the deal considerably and helps this notebook update the definition of the term 'desktop replacement'. The Inspiron 8500 gets away with its bulky design thanks to strong performance.

## BUDGET NOTEBOOK

### ModTech Civic AS2400DW

**PRICE:** $2,499

**SUPPLIER:** ModTech

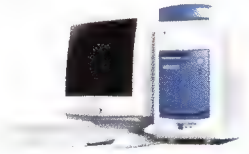
(03) 9873 0068

**ISSUE:** Labs Winner, *March 2003, page 38*

An outstanding performer packed with excellent features – a desktop 2.4GHz Pentium 4 and DVD/CD-RW combo drive – and the price is nice too.

| CATEGORY | PRODUCT | DETAILS | VERDICT |
|---|---|---|---|
| SERVER | Dell PowerEdge 600SC | PRICE: $3,098; $4,769 (inc. Windows 2000 Server)<br>SUPPLIER: Dell 1800 812 393<br>ISSUE: Labs Winner, *November 2002, page 83* | Dell's PowerEdge range is almost exclusively built for small business users, offering a great fusion between price and performance. The 600SC offers an unbeatable mix of good performance and value for money making this an essential inclusion for any small business network. |
| DIGITAL SLR CAMERA | Canon 1Ds | PRICE: From $16,499<br>SUPPLIER: Canon 1800 021 167<br>ISSUE: Recommended, *May 2003, page 53* | The first digital SLR to truly compete with 35mm film SLRs. Superb design make it an extremely versatile package that is built from the ground-up for the needs of the professional photographer. |
| 19IN FLAT-CRT | Sony CPDG420 | PRICE: $1,099<br>SUPPLIER: Sony Australia 1300 137 669<br>ISSUE: Labs Winner, *July 2002, page 97* | This Sony flat-CRT is simply the top choice if you're in the market for a 19in monitor. Rich colour and a fine, crisp image lends the Sony superior image quality, and at the highly competitive price of $1,099 you can't go wrong. |
| BUDGET PDA | Palm Zire | PRICE: $239<br>SUPPLIER: Palm 1800 350 535<br>ISSUE: Recommended, *January 2003, page 42* | It may not have much built-in memory or the fastest processor, but this is a well-built, light and stylish PDA. A bargain at $239. |
| HIGH-END 3D CARD | 3DLABS WILDCAT VP870 | PRICE: $1,297<br>SUPPLIER: InterCAD (02) 9975 7133<br>ISSUE: Recommended, *November 2002, page 37* | The Wildcat VP870 sets a new standard in affordable workstation graphics. Performance and features are unmatched at this price. If you want uncompromising 3D for design, the VP870 should be at the top of your list. |
| 3D GRAPHICS CARD | ABIT Siluro GF4 Ti4200 OTES | PRICE: $357<br>SUPPLIER: BOKERP 1300 665 377<br>ISSUE: Labs Winner, *January 2003, page 66* | ABIT went a little nuts with the OTES's heatsink, but it's an exceptional card that delivers great performance for a very reasonable price. |
| SURROUND SPEAKERS | Klipsch ProMedia 4.1 | PRICE: $749<br>SUPPLIER: Innovision 1300 785 795<br>ISSUE: Quality, *December 2001, page 60* | If you want clear and crisp PC speakers, you can't go past the Klipsch ProMedia 4.1. Fine sound quality with high output levels and low distortion make this set the best we've heard. |
| SOUND CARD | Sound Blaster Audigy 2 Platinum | PRICE: $299<br>SUPPLIER: Creative Labs Australia (02) 9666 6100<br>ISSUE: Recommended, *Dec 2002, page 54* | The Audigy 2 offers an amazing array of features, superb sound quality and a great software bundle. It may try to be all things to all people, but it does a fairly decent job of it. |

Power is the word. The AcerPower ST desktop gets its 3.06GHz of power from the Intel® Pentium® 4 Processor, which means enough grunt to support future applications requiring that extra kick. Onto features, the AcerPower ST has a 17" monitor for brilliant presentation and viewing and a bonus CD-RW. Now for the price. While this incredible desktop normally costs $3,321, we've chopped that by 33% to just $1,999. Still dreaming?



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# A-List: Upgrade guide

Welcome to the Upgrade guide. If you're looking to buy a PC, or perform an upgrade, use this page to set your yardsticks. We have put together specifications for three classes of systems, and broken them down into components and included rough pricing. Changes in hardware specifications and price each month are highlighted in bold text. Let us know how useful this page is to you, and what kinds of systems you want to see here – email: **feedback@pcauthority.com.au**.

## BUDGET PC

**TARGET PRICE: $2,000**

| COMPONENT | DETAILS | TARGET SPECIFICATION | PRICE |
|---|---|---|---|
| • CASE | Midi tower | 300W+ PSU; 5+ bays, front USB | $120 |
| • CPU | AMD Athlon XP 2400+ | 2.0GHz; 256KB L2 cache; 266MHz FSB | $230 |
| • MOTHERBOARD | VIA KT333 ATX | KT333 chipset; sound; ATA100 | $135 |
| • RAM | 512MB PC2700 DDR | 333MHz DDR-RAM | $155 |
| • GRAPHICS CARD | NIVIDA GeForce Ti4200 | AGP; 128MB DDR-RAM | $330 |
| • MONITOR | 17in CRT | 1,024 x 768 @ 85Hz minimum | $236 |
| • SOUND CARD | Integrated sound | Integrated on motherboard | $0 |
| • SPEAKERS | 2.1 stereo speakers | 2 satellites; 1 sub-woofer; 33W+ RMS | $99 |
| • HARD DISK | 60GB IDE | 7,200rpm; ATA100; 2MB cache | $170 |
| • OPTICAL DRIVE | CD-RW IDE | 52 x 24 x 52 CD-RW | $110 |
| • FLOPPY DRIVE | Floppy drive | 1.44MB floppy | $25 |
| • MODEM | 56K modem | V.90 internal PCI | $40 |
| • MOUSE | Basic mouse | Optical; 2-button; wheel; USB, PS/2 | $45 |
| • KEYBOARD | Basic keyboard | 104-key keyboard | $25 |
| • OPERATING SYSTEM | Windows XP | Home Edition | $185 |
| • PERIPHERALS | N/A | None | $0 |
| • WARRANTY | Standard | Three years RTB | $0 |
| Total | | | $1,905 |

## BUSINESS PC

**TARGET PRICE: $2,000**

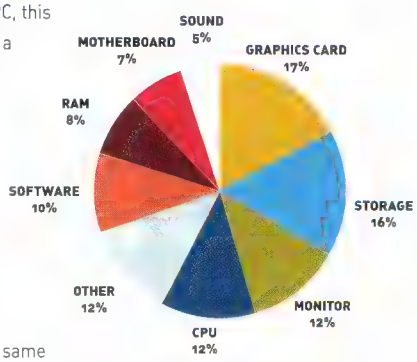
| COMPONENT | DETAILS | TARGET SPECIFICATION | PRICE |
|---|---|---|---|
| • CASE | Slim tower | Micro-ATX; 200W PSU; 2+ bays; tool-less access | $160 |
| • CPU | Intel Pentium 4 2.4GHz | 512KB L2 cache; 533MHz FSB | $355 |
| • MOTHERBOARD | Intel 845G | i845GE chipset; sound; LAN; ATA100 | $200 |
| • RAM | 512MB PC2700 DDR | 333MHz DDR-RAM | $155 |
| • GRAPHICS CARD | Integrated graphics | Integrated on motherboard | $0 |
| • MONITOR | 17in CRT | 1,024 x 768 @ 85Hz minimum | $236 |
| • SOUND CARD | Integrated sound | Integrated on motherboard | $0 |
| • SPEAKERS | N/A | None | $0 |
| • HARD DISK | 40GB IDE | 5,400rpm; ATA133; 2MB cache | $132 |
| • OPTICAL DRIVE | CD-ROM | 52x CD-ROM | $55 |
| • FLOPPY DRIVE | N/A | None | $0 |
| • MODEM | N/A | None | $0 |
| • MOUSE | Basic mouse | Optical; 2-button; wheel; USB, PS/2 | $45 |
| • KEYBOARD | Enhanced keyboard | Ergonomic or extra functions | $120 |
| • OPERATING SYSTEM | Windows XP | Professional Edition | $286 |
| • PERIPHERALS | N/A | None | $0 |
| • WARRANTY | Enhanced | Three years on-site same-day | $150 |
| Total | | | $1,894 |

## ENTERTAINMENT PC

**TARGET PRICE: $4,000**

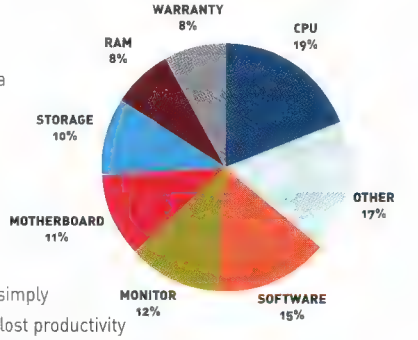
| COMPONENT | DETAILS | TARGET SPECIFICATION | PRICE |
|---|---|---|---|
| • CASE | Midi tower | 350W+ PSU; 5+ bays; front USB | $120 |
| • CPU | Intel Pentium 4 2.66GHz | 512KB L2 cache; 533MHz FSB | $480 |
| • MOTHERBOARD | Intel 845PE | i845PE chipset; LAN; ATA133 RAID | $290 |
| • RAM | 512MB PC2700 DDR | 333MHz DDR-RAM | $155 |
| • GRAPHICS CARD | ATI RADEON 9700 PRO | AGP; 128MB DDR-RAM | $745 |
| • MONITOR | 19in CRT | 1,280 x 1,024 @ 85Hz minimum | $400 |
| • SOUND CARD | PCI sound card | 24-bit; 6.1 output; EAX | $270 |
| • SPEAKERS | 5.1 surround | 5 satellites; 1 sub-woofer; 45W+ RMS | $230 |
| • HARD DISK | 2x 40GB IDE RAID | 7,200rpm; ATA100 RAID; 2MB cache | $300 |
| • OPTICAL DRIVE | CD-RW/DVD-ROM IDE | 52 x 24 x 52 CD-RW; 16x DVD-ROM | $200 |
| • FLOPPY DRIVE | Floppy drive | 1.44MB floppy | $25 |
| • MODEM | 56K modem | V.90 internal PCI | $40 |
| • MOUSE | Optical mouse | Optical; wheel; USB | $85 |
| • KEYBOARD | Enhanced keyboard | Ergonomic or extra functions | $120 |
| • OPERATING SYSTEM | Windows XP | Professional Edition | $286 |
| • PERIPHERALS | Game device | Joystick/gamepad/wheel | $150 |
| • WARRANTY | Standard | Three years RTB | $0 |
| Total | | | $3,896 |

### BUDGET PC



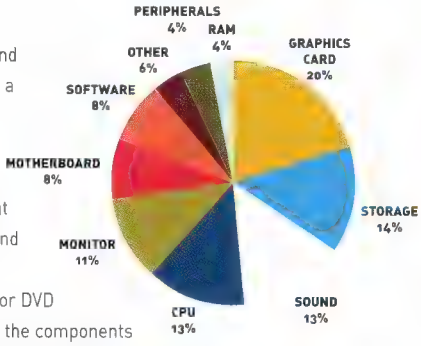

Representing the typical home PC, this system is capable of performing a wide range of tasks. It's suitable for Web surfing, office-based applications and playing most games; and it includes a CD-RW drive. At the moment it features a 56K modem, although with the widespread use of broadband internet, you might want to replace it with an Ethernet card, costing about the same amount. Possible upgrades include forking out an additional $200 or so for a 19in monitor. If you're after home entertainment usage, your next purchase may be a DVD-ROM or better quality budget sound card, which will set you back about $80.

### BUSINESS PC




Here is a basic specification for a multipurpose business PC. Unlike the home PC, however, a business PC has some very different priorities. Performance is one of them, but more important is reliability, serviceability and warranty. You simply cannot afford the downtime and lost productivity that occurs as a result of a hardware failure. As such, extra has been spent on a slim and easily accessible case with a thorough same-day on-site warranty. This spec only represents the basic hardware, and doesn't include the two other major costs a business PC faces: software and services. Total cost of ownership is the mantra, and the initial hardware cost can only be around 25% of a PC's TCO over its lifespan.

### ENTERTAINMENT PC




This system represents a high-end gaming and entertainment PC at a very reasonable price. With the Pentium 4, DDR-RAM and RADEON 9700 PRO, it is about as good as it gets gaming-wise at the moment. The DVD-ROM, sound card and 5.1 channel surround speakers also make it fantastic for DVD viewing or listening to music. All the components are more than adequate to the tasks at hand as they are, but are still offer full upgradeability. Further falling TFT prices mean you can pick up a 17in flat display for around $300 more. DVD burners are a fantastic option for bulk backup or home movies, albeit a bit pricey – upgrading from CD-RW to a DVD writer will set you back around another $450.

## DIGITAL CAMERA

### Minolta DiMAGE 7i

**PRICE:** $1,999

**SUPPLIER:** Hagemeyer 1300 728 606

**ISSUE:** Labs Winner, *June 2003, page 72*

With a stylish and strong mag alloy-housed body, the Minolta 7i isn't budget, but at $1,999 it produces beautiful and accurate results.

## DIGITAL VIDEO CAMERA

### Sony DCR-TRV50

**PRICE:** $3,499

**SUPPLIER:** Sony Australia 1300 137 669

**ISSUE:** Labs Winner, *February 2002, page 73*

A smart mini-DV cam with more features than most, with the added bonus of excellent image quality. Although it was a close call, the DCR-TRV50 got the nod from the panel as the quality DV camera.

## DISK UTILITY

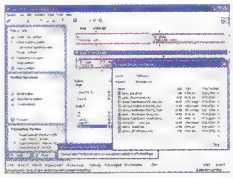
### PartitionMagic 8

**PRICE:** $149.95

**SUPPLIER:** Marketing Results (02) 9899 5888

**ISSUE:** Recommended, *February 2003, page 53*

Simply the best partition utility on the market and an essential purchase for those who don't already have it. However, while version 8 adds some new features, there aren't enough to fully justify upgrading from version 7.



## 15-INCH TFT DISPLAY

### PolyView CMV 1515

**PRICE:** $499

**SUPPLIER:** Impact Systems (02) 9621 2999

**ISSUE:** Excellence, *June 2003, page 48*

An exceptional display at an unbeatable price that's definitely worth considering for the quality conscious or those on a tight budget.

## 17-INCH TFT DISPLAY

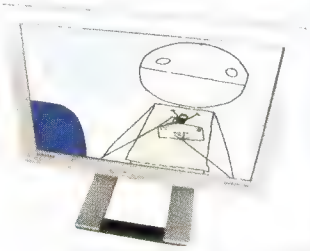
### Samsung SyncMaster 172W

**PRICE:** $1,499

**SUPPLIER:** Samsung (02) 9763 9700

**ISSUE:** Labs Winner, *May 2003, page 71*

The SyncMaster 172W took top honours is almost every category of our tests, and rated the highest of all monitors in this Labs. From such auspicious beginnings it's no surprise that we have awarded this widescreen monitor with the title of winner.



## ATHLON MOTHERBOARD

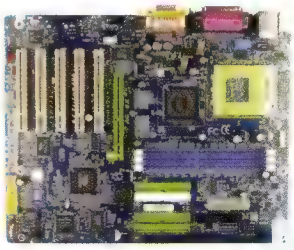
### Gigabyte 7VAXP Ultra

**PRICE:** $329

**SUPPLIER:** Synnex 1300 880 038

**ISSUE:** Labs Winner, *July 2003, page 68*

This board supports DDR400, a 333MHz FSB and has SATA and IDE RAID. It also offers six-channel audio with a full complement of I/O connectivity options, and the build quality is excellent.



| CATEGORY | PRODUCT | DETAILS | VERDICT |
|---|---|---|---|
| MP3 PLAYER | Apple iPod for Windows | PRICE: $845<br>SUPPLIER: Apple 133 622<br>ISSUE: Recommended, *November 2002, page 40* | Apple's 10GB iPod is one of the best MP3 players available, with large storage capacity, superior audio and file sharing capabilities – and now it's on PC. |
| FIREWALL | Fortress End Node VPN | PRICE: $2,629<br>SUPPLIER: Fortress Networks (03) 9697 4444<br>ISSUE: Labs Winner, *November 2002, page 98* | Out of all the firewalls we looked at, the Fortress End Node VPN came out on top. The attention to detail in its configuration options, the ability to micromanage all aspects of the firewall and the richness of its reporting engine were superb. A definite must-have for network security. |
| IMAGE EDITING | Adobe Photoshop 7.0 | PRICE: $1,599 full package; $349 upgrade; $589 educational<br>SUPPLIER: Adobe 1300 550 305<br>ISSUE: Recommended, *July 2002, page 61* | Yet again Adobe has replaced its predecessor with revolutionary, rather than evolutionary changes. With enhanced visual management, creative new brush handling and improved Web capabilities, Phototshop retains its title as the ultimate image editing program. |
| ANTIVIRUS | Norton AntiVirus 2003 | PRICE: $109.95<br>SUPPLIER: Symantec (02) 8879 1000<br>ISSUE: Labs Winner, *October 2002, page 97* | When it comes to antivirus, you not only need a top-performing product, but also one that is easy-to-use, with frequent seamless updates and protection for a variety of possible entry points. Norton AntiVirus 2003 is the pick of the bunch with its excellent user friendly interface and top performance. |
| WEB GRAPHICS | Macromedia Studio MX | PRICE: $1,999<br>SUPPLIER: Macromedia (03) 9855 3100<br>Issue: Recommended, *November 2002, page 71* | Studio MX not only offers great value for money, it's also easy-to-use and comes with a vast array of features. It's a design-focused Web-authoring suite that offers unparalleled functionality across the board and a welcome focus on open standards. |
| WIRELESS CARD | Booya BWSC23 | PRICE: $265<br>SUPPLIER: Booya (02) 9402 9888<br>ISSUE: Labs Winner, *April 2003, page 67* | If you're looking for a wireless network card for you notebook, you need something with reliable performance and good compatability – and the Booya BWSC23 delivers. |
| SOFTWARE FIREWALL | ZoneAlarm Pro 3.5 | PRICE: $83 (US$49.95)<br>SUPPLIER: ZoneLabs www.zonelabs.com<br>ISSUE: Excellence, *May 2003, page 58* | The ultimate professional software firewall to protect your PC from all those would-be hackers. It's stable, scalable, easy-to-use and offers a truly amazing feature list for the price. Honestly, you can't go wrong. |

## I need a notebook with a two hour repair service warranty.

For most businesses, down time is costly. That's why we provide a unique 2 hour Commitment Warranty Express Service** on all Acer notebooks - such as the TravelMate 284XC powered by the Mobile Intel® Pentium® 4 Processor - M. Simply take your notebook to any Acer repair centre in Australia or New Zealand** and we guarantee to have you up and running again in 2 hours or less. Acer is the only PC vendor to offer this service.

## I like to configure my own solutions.

It's easy to build your own computer with Acer. Simply go to www.acer.com.au, click on ShopAcer, and select the Acer product closest to your requirements. Then, choose from a range of options using the drop down menus to build the ideal customised solution for you. An on-line glossary explains each upgrade in plain English, so you can't go wrong. When you're finished, you can buy online, over the phone or save your configuration and take it to your nearest authorised dealer.

## My company needs back-up 24 x 7.

If you purchase an Acer server such as the Altos G300 powered by the Intel® Pentium® 4 Processor, it is backed by Acer's 24 x 7 service hotline. So, in the unlikely event that you do encounter a problem, you can call anytime and one of our experienced technicians will help work through the problem with you on the spot.

All-in-one Business Notebook

## TravelMate 234X

BONUS CARRY CASE†
UPGRADE TO MICROSOFT® WINDOWS® XP PROFESSIONAL FOR $150 RRP INC GST†
ADD MICROSOFT® OFFICE XP SBE FOR $300 RRP INC GST†
Mobile Intel® Celeron® Processor 2.2GHz
14.1" active colour screen
128MB DDR SDRAM
20GB hard disk drive, 24 x CD-ROM
1.44 floppy disk drive
Internal 56K modem + broadband ready 10/100 LAN
Microsoft® Windows® XP Home
2 Hour Commitment Warranty Express Service**

RRP inc GST from $16.69 per week*
Please quote e-Code TM2319

**$1,999**

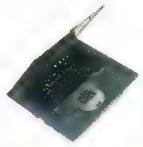
All-in-one Performance Notebook

## TravelMate 284XC

BONUS CARRY CASE†
UPGRADE TO MICROSOFT® WINDOWS® XP PROFESSIONAL FOR $200 RRP INC GST†
ADD MICROSOFT® OFFICE XP SBE FOR $300 RRP INC GST†
Mobile Intel® Pentium® 4 Processor 2.2GHz - M
14.1" active colour screen
256MB DDR SDRAM
30GB hard disk drive
8 x DVD + 24 x 10 x 8 x CD-RW
1.44 floppy disk drive
Internal 56K modem + broadband ready 10/100 LAN
Microsoft® Windows® XP Home
2 Hour Commitment Warranty Express Service**

RRP inc GST from $22.53 per week*
Please quote e-Code TM2811

**$2,699**



Intel® Centrino™ Mobile Technology

## TravelMate 800XCi

BONUS CARRY CASE & 32MB USB HANDYDRIVE†
3 MONTH UNLIMITED BROADBAND WIRELESS ACCESS TO SKYNETGLOBAL® IN AUSTRALIA†
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Intel® Pentium® M processor 1.3GHz
Intel® 855PM Chipset
Intel® PRO/Wireless Network Connection 802.11b
14.1" active colour screen
256MB DDR SDRAM, 40GB hard disk drive
8 x DVD + 24 x 10 x 8 x CD-RW
Firewire & S-video, USB 2.0
Integrated Smart Card security
Internal 56k modem + 10/100 LAN -Broadband internet ready
4-in-1 multi memory card reader
Microsoft® Windows® XP Professional
2 Hour Commitment Warranty Express Service**

RRP inc GST from $33.39 per week*
Please quote e-Code TMC800

**$3,999**

Great low price!

Great value desktop

## AcerPower ST

Intel® Celeron® Processor 2.2GHz
256MB DDR SDRAM
20GB hard disk drive
52 x 24 x 52 x CD-RW
Integrated AC '97 audio
Integrated 10/100M LAN – Broadband internet ready
Ultra AGP II video technology (AGP 8x equivalent for 3D/2D video applications)
Microsoft® Windows® XP Home
Microsoft® Works 7.0
Acer 17" monitor
1 year on site warranty

RRP inc GST from $10.01 per week*
Please quote e-Code STB006

**$1,199**

Top value desktop

## AcerPower ST

Intel® Pentium® 4 Processor 3.06GHz
256MB DDR SDRAM
40GB hard disk drive
52 x 24 x 52 x CD-RW
Integrated AC '97 audio
Integrated 10/100M LAN - Broadband Internet ready
Ultra AGP II video technology (AGP 8x equivalent for 3D/2D video applications)
Microsoft® Windows® XP Professional
Acer 17" monitor
1 year onsite warranty

RRP inc GST from $16.69 per week*
Please quote e-Code STB007

**$1,999**

Great value desktop

## AcerPower ST

UPGRADE TO MICROSOFT® OFFICE® XP PROFESSIONAL FOR $161 RRP INC GST†
Intel® Pentium® 4 Processor 2.4GHz
512MB DDR SDRAM, 60GB hard disk drive
52 x 24 x 52 x CD-RW, Integrated AC '97 audio
Integrated 10/100M LAN – Broadband internet ready
Ultra AGP II video technology (AGP 8x equivalent for 3D/2D video applications)
Microsoft® Windows® XP Professional
Microsoft® Office XP SBE
Acer 15" LCD monitor
1 year on-site warranty

RRP inc GST from $20.87 per week*
Please quote e-Code STB004

**$2,499**

Performance and value server

## Altos G300

ADD MICROSOFT® WINDOWS2000 SERVER FOR ONLY $1,299 RRP INC GST†
Intel® Pentium® 4 Processor 2.0GHz
256MB ECC DDR RAM
Dual Channel IDE RAID controller
3 channel integrated IDE controller
Integrated Intel® Gigabit ethernet controller
52 X CD-ROM
280 watt power supply
3 year on-site warranty with 24 x 7 hotline support

RRP inc GST from $11.68 per week*
Please quote e-Code AAG3401

**$1,399**

Maximum scalability server

## Altos G510

ADD MICROSOFT® WINDOWS2000 SERVER FOR ONLY $1,299 RRP INC GST†
Intel® Xeon™ Processor 2.0GHz
Dual processor capable
512MB ECC DDR RAM
1 x 36GB Ultra 320 SCSI hard disk drive
Integrated 10/100/1000 ethernet controller
54 X CD-ROM
1 x 450 watt hotswap power supply
3 year on-site warranty with 24 x 7 hotline support

RRP inc GST from $33.39 per week*
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**$3,999**

Power and performance server

## Altos G700

ADD AN ADDITIONAL 36GB SCSI DISK DRIVE FOR ONLY $620†
ADD MICROSOFT® WINDOWS® 2000 SERVER FOR ONLY $1,299†
Intel® Xeon™ Processor 2.0GHz
Dual processor capable
512MB ECC DDR RAM
1 x 36GB Ultra 320 SCSI hard disk drive
Integrated 10/100/1000 ethernet controller
54 X CD-ROM
1 x 450 watt hotswap power supply
3 year on-site warranty with 24 x 7 hotline support

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W5 Group ACE199/PCA

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Empowering People

# REVIEWS

Darren Ellis brings you this month's selection of the latest hardware, software and reference titles.

## MOBO-LISE!

Probably more insider information than you ever wanted to know.

I get to see and do a lot of things at *PC Authority*, but oddly one of my favourite parts of putting the Reviews section together is when everything is completed in a Labs; the reviews are done, the analysis complete, and the intro written. Then comes the bit I enjoy the most – when the *PCA* team thinks up a witty, yet relevant title for the Labs that almost always includes some form of pun.

In the past I've used such wonders as 'Children of the resolution', for a CRT round-up (groan), 'Hertz so good', for a CPU round-up (stop it!), and once tried to slip 'You auteur be congratulated' through for a DV camera Labs (enough!). Thankfully, this latter insult to the punning arts was caught well before it made it to print.

I have to say I'm rather proud of Dan Chiappini's 'The Thick and the Dead' for May's TFT Labs, but this month's motherboard Labs (*page 62*) proved to be a tough naming assignment.

We'd already used 'Mother load' for our previous motherboard round-up, so we were left with 'mother', 'board' or 'mainboard' as starting points. This netted us such horrors as 'Board members', 'The board and the beautiful', 'Mother horde', and some dire variations of the cliché 'mother of invention'.

Once 'Crazy-arsed mobos!' was shouted across the office in jest (I'm not saying by whom) and we'd strayed to the shorthand 'mobo' for motherboard, the awful puns began to flow with frightening regularity.

'Crazy-arsed mobos!' (never a serious contender, honest!) turned into variations of Austin Powers talking about how to get your 'mobo' back (thanks, Simon), to Morrison's 'Mr Mobo rising', and the wonderfully retro sounding 'Mobotronic' and of course 'Mobophonic'.

Unfortunately someone took the homophone of mobo and ran with it, and soon suggestions ranging from the ridiculous ('Mobophobic'), to the sublimely ridiculous ('Mobosexual', 'Mobophilia' and 'Mobophiliac') were arriving in the inbox.

Something had to give, before 'Mobosapiens' was accepted. We've stayed with 'Construction Zone' for the feature, which is more in keeping with the building block nature of motherboards and suits the illustration fine, but I'd love to hear any title suggestions you might have for this Labs or any other Labs we might engage in.

Email some good (?) ones to me at *dellis@pcauthority.com.au* and not only will I award a prize for the best, but if we use your suggestion we'll list you as a contributor in the magazine for that feature!

Moving on from the minutiae of life at *PC Authority*, this month has seen some excellent gear come through the Labs. We're really pleased with the first Aussie test of the Hi-Grade Xperian PC (*page 36*).

A few months ago in my Reviews intro (*April 2003, page 34*), I was talking about the fabulous PC designs available in Japan – the kind of stuff that I didn't think would ever grace our shores.

The Xperian is almost there though – it's a hybrid of Japanese chic with a touch of functional European styling. This is more a TV, radio and DVD player than a PC, and it's sure to do well wherever it's sold.

**DARREN ELLIS**

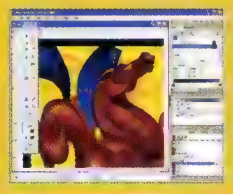
**'We'd already used "Mother load" for our previous motherboard round-up, so we were left with "mother", "board" or "mainboard" as starting points. This netted us such horrors as "Board members", "The board and the beautiful", "Mother horde", and some absolutely dire variations of the cliché "mother of invention".'**

## WHAT'S HOT & WHAT'S NOT

### HOT

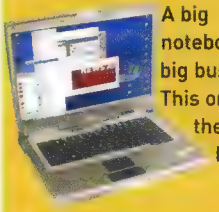
### MACROMEDIA FREEHAND MX

FreeHand is back with a bang! Page 54



### HOT

### DELL LATITUDE D800

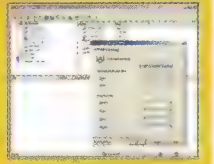


A big notebook for big business. This one's got the goods. Page 40

### HOT

### CA eTRUST ANTIVIRUS V7

Fast, thorough, very customisable and with so many versions it will suit the most varied OS options. Page 59



# THIS MONTH'S SELECTION

## PCs AND NOTEBOOKS


Hi-Grade Xperian ..... 36

Athlon XP 3200+ ..... 37

Pioneer Dream PC ..... 37

Toshiba Tecra S1 ..... 40

Dell Latitude D800 ..... 40

Pioneer D400S ..... 41


## PERIPHERALS


Canon MV650i DV ..... 42

Viewsonic AirPanel V110 ..... 42

HP PhotoSmart 1200 ..... 47

Deltron Cinema Disk ..... 47


## SOFTWARE


MYOB Business Basics ..... 48

QuickBooks Pro ..... 48

Business Breeze ..... 49

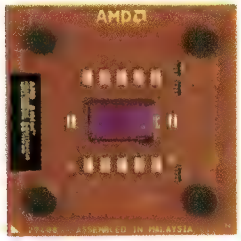
Corel Designer 10 ..... 51

Macromedia Freehand MX ..... 54

HardKey EG/Pro ..... 56

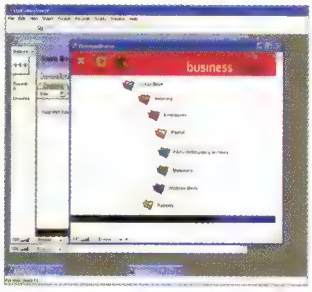
eTrust AntiVirus V7 ..... 59

Creo Six Degrees 1.51 ..... 59


The new Athlon XP, with a 400MHz front side bus, has some impressive performance, although motherboard support is a little slim at the moment. **Page 37**

Portable, wireless displays are here. But what's the price for freedom? **Page 42**




The new financial year is approaching – get your business under control with three top-shelf packages. **Page 48**

A nice combo PC, TV, PVR, FM radio, DVD player, this would look good in the kitchen. **Page 36**

This tiny scanner is perfect for scanning in photos, and it's portable so next time you're visiting Aunty Jo you can scan in pics of Uncle Bob's Lakes Entrance fishing trip. Nice. **Page 47**

## RATINGS EXPLAINED

EXCELLENT .. 1 2 3 4 5 6
VERY GOOD .. 1 2 3 4 5
GOOD ..... 1 2 3 4
AVERAGE .... 1 2 3
POOR ..... 1 2
DREADFUL ... 1

This product is also available on, or the hardware supports, Linux.

This product is also available on, or the hardware supports, the Macintosh platform.

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Only the best products get an award. But only the best of the best make the A-List.

**PERFORMANCE**
More than just raw speed – how well does the product do its job?

**FEATURES**
Not just the quantity on offer, but are they up to scratch, and do innovative features deliver?

**EASE OF USE**
How good is the interface, documentation and training? Can you get up to speed quickly?

**VALUE FOR MONEY**
A balance of performance, quality and features compared to the price.

**CONTENT**
How in-depth is the subject matter? Is the product interesting and informative?

**DESIGN**
Is the product easy to access? Can you find whatever you need quickly?

**OVERALL**
A weighted and balanced collation of all the scores to give a final evaluation for the product.

**EXCELLENCE**
A product with no equal at the time. Either a technology showcase or unrivalled quality for its time.

**RECOMMENDED**
If you're buying, then any product with this stamp should most definitely be on your shortlist.

# HI-GRADE XPERIAN

Conceptually sound and very practical – the Xperian is much more than just a powerful PC.

## ENTERTAINMENT PC

**PRICE:** $3,500 – $3,950 EST
**SUPPLIER:** Hi-Grade
1800 770 550
**INTERNET:**
www.higrade.com.au
**SPECIFICATIONS:** 2.53GHz Pentium 4; 512MB DDR RAM; 40-120GB hard disk; 64MB Mobility RADEON 9000; 17-inch TFT; DVD-RW or CD-RW; 56K modem; 10/100 Ethernet; two FireWire ports; Four USB 2.0 ports, PC card slot; SD/MMC reader; FM tuner; TV tuner; TV-in and S-Video out; wireless mouse and keyboard; wireless remote and stereo speakers

**VERDICT:** Converging digital technology, the Hi-Grade Xperian combines the traditional with new and the powerful – TV/VCR and radio, bundled in with a DVD home theatre system alongside a versatile and powerful mid-range Pentium 4 PC. This is something to look out for – or simply to look at.

The Hi-Grade Xperian can simply be described as a bundle of essential technology ingeniously put together in one desirable package.

It takes a moment for all the specs to sink in. The Hi-Grade Xperian is a powerful personal computer capable of operating as a standalone radio, television, DVD and CD/MP3 player – without having to access any of these features through the computer's OS. It represents the evolutionary convergence of digital entertainment technology: creating a single media centre.

The test model that arrived in our Labs featured a 2.53GHz Pentium 4 with 512MB DDR RAM, 40GB hard disk, a Mobility RADEON 9000 graphics card and a DVD/CD-RW drive. These core specifications alone describe a formidable mid-range PC. It has FireWire, USB, Ethernet and a built in modem, as well as support for a variety of card media, including SD/MMC and PCMCIA. A built-in FM and TV tuner plays an important part in what makes the Xperian special, and all this is mounted behind a 17in tilt-capable LCD screen. The power adapter is built-in, and as the Xperian uses a wireless mouse and keyboard, the only cables you'll ever need go to the power and antenna sockets in the wall.

Taking a step back away from the specifications, the Xperian will never look intrusive – in fact, looking more like a flat-panel television, it will serve as a high technology fashion accessory for any room in the home. Measuring 20cm long and around 48cm wide, its slim form won't steal any valuable space; the wireless keyboard can be folded up against the screen. The DVD/CD-RW unit is located on the right near the video connectors, and pops out vertically. Side and back panels have USB, FireWire, networking, modem, optical-out ports, and PC card and card media readers. The range of high-speed connectivity options means that the Xperian can function as a hub for peripherals like camcorders and digi-cams. Furthermore, it's able to handle wired LAN and inter-networking, and with a wireless PC card, it is able to wireless network using 802.11/Wi-Fi technology. None of these ports or plugs distract from its lounge room looks.

The LCD screen is covered by a piece of plastic that not only protects the screen from grubby fingers or spills, but also distinguishes the unit from traditional TFT designs.

A look at the wireless keyboard reveals some embedded central controls, including the unit's power/standby switch. The other buttons control the FM, TV/VCR, DVD/VCD, CD/MP3 and PC.

The true versatility of the Xperian is revealed only when you fire it up – it automatically boots into 'PC-mode', or Windows XP; however, this boot may be interrupted to switch the machine to any one of the other modes. In other words, the Xperian can be transformed into a radio, DVD/VCD player, a television, a CD/MP3 player or a PC at the touch of a button within 10-15 seconds without having to wait for the boot-up to finish. All audio/visual functions may also be accessed via the supplied wireless remote control.

Though the test model we received was shipped with only a 40GB hard disk and a DVD/CD-RW combo drive, the on-sale models will offer larger capacity drives and DVD-RWs. This means the Xperian will also be able to record and write copyright-permitting media from the TV/VCR, radio and DVDs.

The Xperian looks very polished for a pioneer model converging digital entertainment into one device. It can handle simple day-to-day tasks such as Web browsing, office productivity and reading email, as well as heavier tasks such as gaming, and recording to DVD. It's slim and futuristic design helps its ambient roles as a television or radio playing in the background. You can shake the house by using it as a full theatre system.

But there are things to watch out for. It's easy to carry and portable, but it's not mobile. In other words it is heavy. We found that the handle on top of our test model was not sturdy enough to hold the weight of the unit alone.

You also have to keep an ample supply of AA batteries handy – the mouse, keyboard and remote are the only ways of really controlling or interacting with the Xperian.

Also, the Xperian is not built for upgrade enthusiasts – there is no serious provision for you to pop the hood and insert chunky components at will.

The many benefits of the Xperian outweigh these concerns. There is proof that a lot of thought has gone into the design and development of this machine. The Xperian represents an amazing package of both traditional and new technology – as practical as it is; we feel that it will carry the 'wow' factor for quite some time yet.

Hi-Grade plans on opening the sales for the Xperian with two models – one staring at around $3,950, with CD or DVD-RW and 120GB, which is due very soon – around mid-June; and a the other a $3,500 model due to be released a month after.

This unit will also have DVD/CD-RW and an 80GB hard disk. Also scheduled for release are models with 19in and 20in TFT screens.

**Nirmal Chandrasena**

# ALTHON XP 3200+

## SOCKET A CPU

**PRICE:** $950 EST
**SUPPLIER:** AMD
**INTERNET:** www.amd.com
**SPECIFICATIONS:** Socket A; 2.2GHz; 0.13-micron process; 512KB L2 cache; 400MHz FSB; 1.65V power consumption; and QuantiSpeed architecture

**VERDICT:** A great processor but with features not widely supported at the moment.

**PERFORMANCE** 1 2 3 4 5
**FEATURES** 1 2 3 4 5
**VALUE** 1 2 3 4
**OVERALL** 1 2 3 4

The Athlon XP 3200+ will probably be the last Barton-core desktop processor to come from AMD before the launch later this year of the Athlon 64, its desktop 64-bit processor.

There's not a great deal of difference with this chip compared to the last crop of Athlon XPs, as the clock-speed increase from 2.17GHz (Athlon XP 2700+, 2800+, 3000+) to 2.2GHz with the 3200+ is small and makes for negligible performance gains.

The most important differentiator is the 3200+'s 400MHz frontside bus (FSB). This theoretically ups the performance matrix from the previous chip's 333MHz FSB, but at the moment there's not a great deal of a boost.

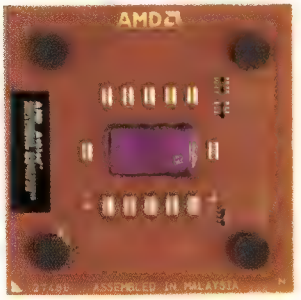
Support at the time of writing for the 400MHz FSB was sketchy to say the least, so early adopters beware. Motherboards based on SiS's 748 and NVIDIA's nForce2 400 chipsets should be available by the time you read this, but from our early testing they weren't always stable.

We managed to squeeze some impressive benchmarks out of the processor. We tested the chip on the only board from our Labs test that could run it happily; the Gigabyte 7NNXP.

This board supports dual-channel DDR400, so you can pack a lot of RAM around your chip. We also bundled the board with an ATI RADEON 9800 PRO, and the 3DMark2001SE Pro scores they returned were phenomenal. It was no slouch in 2D either, with a SYSmark score of 249.

If you're looking for a chip and must have the latest then go right ahead and buy, but for our money we'd hold off until 400MHz FSB support stabilises.

**Darren Ellis**




A 400MHz frontside bus should give the Althon XP some performance headroom.

# PIONEER DREAM PC P2400

## MINI PC

**PRICE:** $1,999
**SUPPLIER:** Pioneer (02) 9690 2888
**INTERNET:** www.pioneercomputers.com.au
**SPECIFICATIONS:** Pentium 4 2.4GHz; 256MB DDR-RAM; Intel 845GV chipset; 40GB 2.5in notebook hard disk; DVD-ROM/CD-RW; Intel Extreme Graphics; 10/100 Ethernet; three FireWire ports and four USB 2.0 ports

**VERDICT:** Stylish, quiet, and rugged, the Dream PC is a good choice for the lounge room, and qualifies as a low-end portable gaming machine for LAN nights.

**PERFORMANCE** 1 2 3
**FEATURES** 1 2 3 4
**VALUE** 1 2 3 4
**OVERALL** 1 2 3 4

When we opened the box for the Dream PC from Pioneer, we though there must have been some kind of mistake. Coming in a form factor reminiscent of external hard disk units, the Dream PC packs an entire P4 system in a surprisingly small space, and at 3kg, it weighs less than some notebooks.

The Dream PC is powered by an Intel Pentium 4 2.4GHz, and has 256MB DDR-RAM, so the spec is decent. Storage is handled by a quiet 40GB notebook hard drive and a DVD-ROM/CD-RW drive. Video and audio are onboard and the Dream PC offers a good deal of connectivity with three FireWire ports, four USB ports, a serial port and 10/100 Ethernet port distributed over the front and back for easy access. The whole compact unit feels solid, and the only real requirement for safe operation is that the fan-grill remains clear.

When fired up, the Dream PC was quiet, with the only sounds coming from using the DVD-ROM/CD-RW drive. While performance was generally smooth, it lacks a powerful video chip. It also doesn't offer surround sound, nor can it compete with a similar desktop supporting a discreet video card. It's smaller than most mini-PCs, and this makes it a handy for travelling 2D gamers.

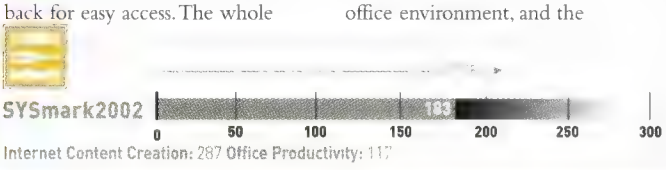
The abundance of ports means that it can be used in a home-office environment, and the Dream PC can happily be used with camcorders, digital cameras etc.

It does however, lack an internal modem, and upgrade capacity is low. We also found the power and reset buttons tedious to use. None of the surfaces had rubbery attachments, and on a smooth surface the PC presented no real resistance to sliding.

What the Dream PC lacks in raw power it makes up for with portability and looks. It offers a range of options for connecting peripherals and has the technology to handle productivity, basic games and multimedia. The Dream PC comes with Microsoft Windows XP, and different configurations are available to order.

**Nirmal Chandrasena**

The Dream PC manages to be sweet-looking without crippling its performance.



*INTEL® CENTRINO™ MOBILE TECHNOLOGY: Intel® Pentium® M Processor 1.60GHz; Intel® PRO/Wireless Network Connection 802.11b; Intel® 855M Chipset Family/60GB HDD/DVD multi-drive/512MB RAM/15"UXGA TFT screen/ATI Mobility™ Radeon™ 9000 graphics controller/SD Media slot/5.3 hours battery life (may vary depending on configuration, applications, power management settings and features utilised)/7.8 hours with second SelectBay battery /2.8kg.* Intel, the Intel Inside logo and Centrino are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

# The wireless Tecra S1. Because you rarely have time to stop and recharge.

OBSERVATION: A wireless notebook can do wonders for your personal productivity. Especially when you spend half your day in meetings. But that's academic if your battery can't go the distance.

OBJECTIVE: Build a powerful desktop-replacement notebook based on the new Intel® Centrino™ mobile technology. Design it specifically for corporate users and the way they work.

RESULT: The Tecra S1 has all the features you could want in a desktop replacement (15" screen, DVD read/write etc). It also has integrated wireless LAN, so you can access the corporate network or the internet from anywhere within range of a Wi-Fi hub or public hotspot. Finally, the Tecra S1 is equipped with a battery that has 50% more capacity than normal. It delivers a solid five hours of life. And that means you can stay connected and productive through long meetings without worrying about your notebook turning into an expensive paperweight. That's not just good for productivity, it's good for your confidence too.

ACTION: See your nearest Toshiba Authorised Reseller, visit www.isd.toshiba.com.au or you can call 13 30 70 for more information.

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Toshiba PCs use genuine Microsoft® Windows®
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# TOSHIBA TECRA S1

## NOTEBOOK

**PRICE:** $5,720
**SUPPLIER:** Toshiba 13 30 70
**INTERNET:** www.toshiba.com.au
**SPECIFICATIONS:** Intel Centrino 1.6GHz; 512MB DDR; 60GB hard disk; DVD-R/-RW/RAM; 10/100 Ethernet; 56K modem; 802.11b wireless; ATI Mobility 9000; SD slot; PCMCIA slot; WinDVD; Windows XP Pro; and one-year parts/labour warranty

**VERDICT:** Decked out with plenty of features, this eye-pleasing model is as functional as it is stunning.

**PERFORMANCE** . 1 2 3 4 5
**FEATURES** .... 1 2 3 4 5 6
**VALUE** ..... 1 2 3
**OVERALL** ..... 1 2 3 4 5

Brimming with features, the Tecra S1 is the embodiment of 'thorough'. This is no ordinary notebook, sporting Intel's 1.6GHz Centrino processor with a 1MB on-die L2 cache, 400MHz frontside bus and a half gig of DDR. It's nothing short of impressively fast.

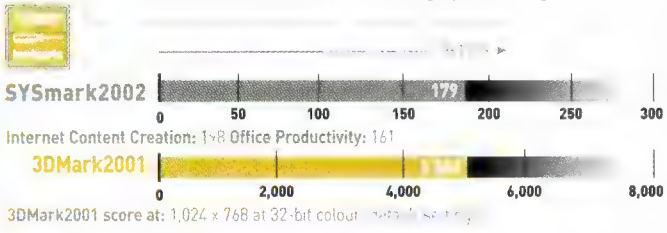
Intel's contradictory push that MHz isn't the be-all-and-end-all performance rule of thumb is surprisingly true here. Even at 1.6GHz, it performed amiably, returning an overall score of 179 in Sysmark2002 and just over 5,500 in 3DMark2001.

The unit's performance is inspiring, with a superb design and feature-set. The included combo DVD-RAM/DVD-R/-RW CD-RW drive is perfect for backing up critical business data or amateur home movies.

Toshiba has included an ATI Mobility 9000 32MB graphics card. More than just a basic display adaptor, it's perfect for a machine with so much flexibility – while the easiness on the eyes makes for an ideal companion for the non-serious gamer or office user.

Rounding off the package is a meaty list of connectivity options including: SD slot; two PCMCIA bays; NTSC/PAL output; infrared; three easy-to-access USB ports and an 802.11b wireless adaptor, required for the Centrino label.

Video playback is a pleasure,



with full duplex sound support enhancing the viewing experience. Weighing in at a hair over three kilograms without power supply, it's not the lightest notebook, but given the functionality it's not bad.

It's a little steep in the pricing department, and it won't be for everybody, but power users after portability and business autonomy will be impressed.

Known the world over for its reputation and commitment to style and functionality, Toshiba's image is only further reinforced by a product of this calibre.

**Dan Chiappini**

# DELL LATITUDE D800

## NOTEBOOK

**PRICE:** $5,684
**SUPPLIER:** Dell 1300 303 275
**INTERNET:** www.dell.com.au
**SPECIFICATIONS:** 1.6GHz Intel Pentium-M; 512MB DDR; 40GB hard disk; NVIDIA GeForce4 4200; VGA and S-Video out; CD-RW/DVD; Gigabit Ethernet; 56K modem, 802.11b/g wireless; Bluetooth; USB 2.0; FireWire; mic and headphone jack

**VERDICT:** With excellent battery life and dual-band wireless capability, the Dell D800 is a versatile portable accessory, but its weight and large screen suit it better as a desktop replacement.

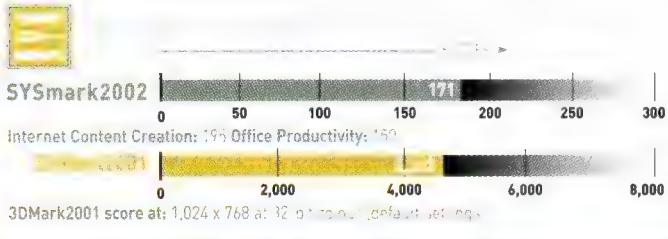
**PERFORMANCE** . 1 2 3 4
**FEATURES** .... 1 2 3 4
**VALUE** ..... 1 2 3 4
**OVERALL** ..... 1 2 3 4

Powered by a 1.6GHz mobile Pentium processor, featuring dual-band 802.11a/g wireless capability and sporting a 15.4in wide-screen display, the Dell D800 represents the best of the Latitude series of notebooks. At around 3.3kg, it is not light, nor is it thin – but is complemented by an exceptional finish and a solid set of technology.

The performance of the D800 is supported by 512MB DDR with 40GB space. Despite graphics power not being the driving factor in most office productivity tasks, the D800 comes with a GeForce 4200 card with S-Video out. This means it can handle some gaming – but this isn't the real highlight.

The D800 has a 15.4in wide-screen display. The display looks flawless at 1,920 x 1,200 and the widescreen is intended for business users who appreciate a larger workspace. Alongside the DVD/CD-RW combo drive, the widescreen offers a better cinematic experience for movie buffs. Though there are audio jacks, the unit does not have speakers.

With connectivity options rivalling a full desktop, the D800 has FireWire, USB, Gigabit Ethernet, and an internal modem. For those of you who don't want to be wired to



everything, the D800 comes with 802.11b/g dual-band wireless technology and Bluetooth, cutting the cables for short and long distance communication.

The included dual-band wireless technology can come in useful when on the move and the 3.5 hours of battery life is well above average. It's a little on the heavy side, and along with its widescreen, the D800 is also ideal as a desktop replacement. Note that the D800 cannot be called a Centrino as it does not have the required branding on its components.

**Nirmal Chandrasena**

# PIONEER D400S

## NOTEBOOK

**PRICE:** $2,799
**SUPPLIER:** Pioneer Computers (02) 9690 2888
**INTERNET:** www.pioneercomputers.com.au
**SPECIFICATIONS:** Pentium 4 2.53GHz; 512MB DDR RAM; SiS M650 chipset; 40GB hard disk; DVD-ROM/CD-RW combo drive; 15-inch XGA TFT; integrated 10/100 Ethernet; 56K modem; Windows XP Home; and a three-year labour warranty

**VERDICT:** Great for power users after speed and portability, the D400S sports plenty of connectivity and is perfect for users on the go.

PERFORMANCE . 1 2 3 4 5
FEATURES .... 1 2 3 4 5
VALUE ..... 1 2 3 4 5
OVERALL ..... 1 2 3 4 5

Built from sturdy ABS plastic, Pioneer's solid-bodied D400S notebook tips the scales at 4.1kg with AC adaptor. Given its intended use, this should present no problem.

The D400S packs the usual gear, and offers well-thought out front-mounted FireWire along with 802.11b on/off controls for the optional WLAN device. We were surprised the right-hand side of the chassis contained absolutely no connectivity options – a shame given the inclusion of only a single PCMCIA port. Three USB ports are present – two rear-mounted and one on the left-hand side.

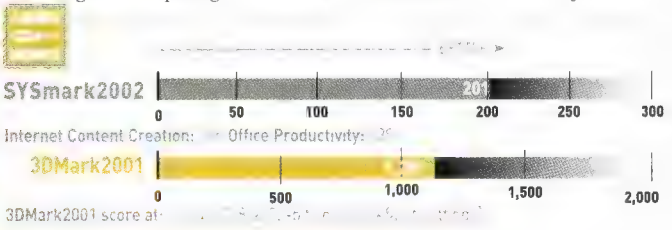
The keyboard is comfortable and has generous spacing, so there's no cramping here. Inclusion of a DVD-ROM/CD-RW 'quiet' combo drive made for almost noise-free usage and format flexibility, a pleasant surprise given the price tag.

Pioneer's addition of a desktop P4 isn't uncommon in the budget notebook range; although it does affect battery life, with MobileMark2002 reporting just 135 minutes of usage time.

The 2.53GHz desktop processor pushed SYSmark2002, returning an overall result of 201 marks – reasonable for a notebook of this calibre. Unfortunately the SiS M650 video chip is rather lacking, returning only 1,259 marks in 3DMark2001SE Pro. This just reinforces the fact that this is a productivity machine.

All in all, the D400S is a great unit for users after a workhorse. The notebook can take the day-to-day bumps and scratches, and comes with a three-year labour warranty. Although the battery life is a little on the lean side, the list of features and low price tag wins big points. Bang for buck, this is a great notebook for the frequently desk-bound office or student user, packing quite a punch in the feature department, but not too hard on the hip pocket.

**Dan Chiappini**

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CORNEA 1810MF

QUALITY ..... 1 2 3 4
FEATURES ..... 1 2 3 4 5 6
VALUE ..... 1 2 3 4 5 6
OVERALL ..... 1 2 3 4 5

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# CANON MV650I DIGITAL VIDEO CAMERA

## DV CAMERA

**PRICE:** $1,699
**SUPPLIER:** Canon Australia 1800 021 167
**INTERNET:** www.canon.com.au
**SPECIFICATIONS:** Mini DV/PAL; 1/6-inch interlaced CCD; 800,000 pixel CCD; 8MB memory card; 1,024 x 768 resolution still images on card; 22x optical zoom; 440x digital zoom

**VERDICT:** Excellent consumer digital video camera with plenty of features and a very nice lens.

**QUALITY** ..... 1 2 3 4 5
**FEATURES** .... 1 2 3 4 5 6
**VALUE** ..... 1 2 3 4
**OVERALL** ..... 1 2 3 4 5

Canon's new 600i series of digital video cameras doesn't offer any major changes to the 500i series, just a continuing improvement in quality and a few nice extras.

The cameras still look the same and are just as easy to use, but the new top of the range 650i is about as good as you are going to get in its price range.

No camera is worth a pinch of salt without a decent lens and the 2.8-61.6mm f/1.6-3.6 22x optical zoom that features across the 600i range is a beauty. The optical zoom remains sharp even at high magnification and in only average light. However, you can forget about the 440x digital zoom – its only there as a gimmick and hardly worth the trouble.

The 650i comes with Super Night Mode for recording video to tape in dark areas, and Low Light Plus for stills and video to memory card. However, you don't need to switch either on until it gets really dark. Normal room lighting, and even candle light, will usually suffice in standard shooting modes.

Any hand movement is ironed out with the electronic image stabiliser, which works well even when shooting from a train or other moving vehicles. Dull overcast days don't phase the 650i or lessen the capabilities of either the optical zoom or image stabiliser, and it handles bright glare and reflection reasonably well.

The built-in microphone is at the front of the camera, which can present problems if shooting into a head wind, but otherwise does a good job. The wind noise can always be edited out using the editing software that comes with the camera, which is version 2 of Canon's own VideoPresenter.

Still mode (to SD or MMC card) generates photos good enough to produce postcard size prints and Canon has included direct print capability so the 650i can be linked directly to a photo printer and the images printed from the card. It can also be used to record brief video clips in 320 x 240 or 160 x 120 mode.

The MV650i comes in at the top of the mid-range of consumer digital video cameras.

Overall it's a nice package at the upper end of the consumer range, but has the features and quality to justify its positioning and price.

**David Hellaby**

# VIEWSONIC AIRPANEL V110

## WIRELESS DISPLAY

**PRICE:** $2,299
**SUPPLIER:** Harvey Norman
**INTERNET:** www.harveynorman.com.au
**SPECIFICATIONS:** 10in passive matrix touch-screen TFT; 400MHz Intel XScale processor; 32MB ROM and 64MB RAM. Supports an 800 x 600 resolution

**VERDICT:** An excellent example of where the technological landscape is headed, but it misses out on some key features.

**QUALITY** ..... 1 2 3 4 5
**FEATURES** .... 1 2 3 4
**VALUE** ..... 1 2
**OVERALL** ..... 1 2 3

The Viewsonic airPanel V110 is the first of its kind – a wireless, portable display that unfetters you from your PC and allows you to work around the home and office while your PC sits in another room. It runs Windows CE for Smart Panels which is like a pared-down version of Windows XP, and mimics your system desktop allowing you to access files and programs without needing to be next to your PC.

This portable 10in TFT comes bundled with an 802.11b access point to not only wirelessly connect your airPanel to your PC, but it can also be used to connect other devices. The bundle includes a full copy of Windows XP Professional so you can install or upgrade to the airPanel's required standard.

With its Tablet PC styling and functionality it's hard not to compare and contrast the airPanel with a tablet, but we should point out that the V110 is a totally different beast and not a Tablet PC at all. It does share a touch-screen interface, it is wireless, has its own processor and RAM, but the V110 is designed as an adjunct to your current system, not as a standalone machine.

Looks very much like a Tablet PC, but it's all display.

As a first of its kind, the airPanel V110 has to be applauded and we give a hearty nod to Viewsonic for releasing this, but there are a few problems with the airPanel that mean it's not as good as it may seem on paper. For starters, while the thought of wirelessly working via a portable display is appealing, in reality it's limited by data bandwidth and its 800 x 600 resolution, so don't expect to be streaming DVDs or games from your PC. In this regard, it's like a constantly-synced PDA.

The most inhibiting factor with the airPanel V110 is the price. $2,299 is a lot to pay for a display with such low resolution, and even when you account for the wireless hub, WinXP Pro. While the functionality and features of the airPanel V110 that make it a compelling product, it's just not being offered for an equally compelling price.

**Darren Ellis**

# Unbeatable Performance
# Unbeatable Price

MOBILE TECHNOLOGY

## EXCEL Notebooks Series

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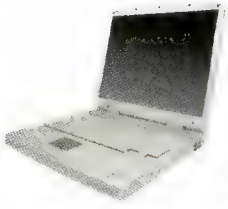

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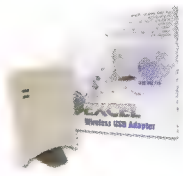

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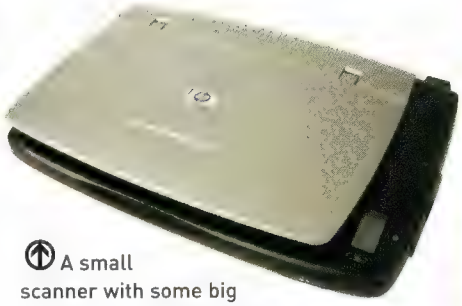
# HP PHOTOSMART 1200



A small scanner with some big capabilities, the PhotoSmart 1200 is now part of the go-mobile wave.

The tiny Hewlett Packard PhotoSmart 1200 is a sleek, portable, flatbed scanner tailor-made for scanning small items with minimal hassle.

Weighing in at a tiny 680g with a scan bed of only 10 x 15cm it's perfect for scanning photos. Features include 1,200 x 1,200dpi optical resolution, a USB 2.0 port, CompactFlash card and shared MMC/SD slots. Power is by the USB 2.0 port, or by four AA batteries when unplugged.

This scanner can capture an image of 300dpi in 14 seconds and at 1,200dpi in 90 seconds. Images may be directly transferred to storage card media. If a printer is handy, the PhotoSmart 1200 can be used to duplicate photos without a computer.

The scanner lid is removable, which helps you capture partial images of objects larger than the scan bed. You can then use the bundled ArcSoft Panorama software to assemble these partial-captures into a complete image.

The build quality of the PhotoSmart 1200 is excellent. The only part that was found to be a little flimsy was the rubber USB port cover. The MMC/SD and CF card slots are protected by a solid piece of plastic that completely detaches, a problem if you were to forget about it. The unit features a simple onboard LCD display that indicates battery power, selected image quality and remaining space making the device feel similar to a digital camera.

The software is user friendly and operating the scanner is straightforward. Scanning photo-sized documents posed no problems, but scanning larger documents on the small scan bed was tedious.

The HP PhotoSmart 1200 ships with a USB cable, setup poster/guide, user manual, and a CD with HP photo and imaging software, HP Instant Share, HP Memories Disc Creator and Arcsoft Panorama Maker. Memory cards and batteries are not included, and the scanner is not capable of recharging the batteries.

Featuring independence from wired power, light weight, small size and the ability to write directly to card media, the HP PhotoSmart 1200 saves on time, space and the bulkier hassles associated with larger scanners.

**Nirmal Chandrasena**

## PORTABLE SCANNER

**PRICE:** $249
**SUPPLIER:** HP Australia 13 23 47
**INTERNET:** www.hp.com.au
**SPECIFICATIONS:** 1,200dpi; 36-bit colour; 10 x 15cm scan bed; CF/SD/MMC card slots; USB 2.0 port; 680 grams; and can take four AA batteries or USB power

**VERDICT:** A light and convenient device that makes photo scanning easy and saves space and time.

**QUALITY** ..... 1 2 3 4 5
**FEATURES** .... 1 2 3 4 5
**VALUE** ..... 1 2 3 4 5
**OVERALL** ..... 1 2 3 4 5

# DELTRON CINEMA DISK

The 'wow' factor is still fresh with this versatile media player.

The DELTRON Cinema Disk is a portable media player capable of handling audio and video files while doubling as a 20GB portable external hard drive. It offers USB 2.0 connectivity, and reads CompactFlash (I & II) and Microdrive flash cards. The player supports MPEG-1 and MPEG-2 formats, MP3, and JPEG files and it has outputs for stereo audio, S-Video and composite. The chunky Lithium-Ion battery makes the Cinema Disk must less portable while it's attached, however, the device may also be powered directly though an AC adaptor.

The build quality of the Cinema Disk is excellent: the controls are intuitive and accessing the data using the backlit display is fairly simple. It ships with an IR remote, which can be used to activate an OSD on the display from a distance. The remote is small, rugged and not easy on the fingers. No matter how you decide to control the unit, the Cinema Disk is almost completely silent when in operation.

The unit's S-Video and composite outputs allow you to connect the unit to a television, or using the supplied cable, an S-Video capable monitor. The device can act like a CF card reader when connected to the computer via USB. Its functionality and portability mean that flash cards from a digital camera for example, may be emptied into the Cinema Disk. If images are encoded as JPEGs, the Cinema Disk can output them to a TV while an MP3 is playing in the background. Interestingly, the unit has no support for recording and doesn't include a line-in or microphone.

The complete package includes a slim carry case, remote control, Li-Ion battery, USB cable, S-Video and composite cables, car charger, AC adaptor and a manual. Also, for those bandwidth hungry media freaks, a FireWire version of the player is due to be released.

Overall, the DELTRON Cinema Disk is a decent unit for playing audio and video on your TV or PC, however, as it's slightly on the chunky side when its battery is attached, its portability is limited.

**Nirmal Chandrasena**

## MULTIMEDIA PLAYER

**PRICE:** $1,169
**SUPPLIER:** CoNeXuS (02) 9975 2799
**INTERNET:** www.conexus.com.au
**SPECIFICATIONS:** USB 2.0; 20GB hard disk capacity; Compact Flash types I, II and Microdrive support; MPEG-1/2, MP3, and JPEG support; 3.5mm audio outputs; S-Video and composite output; IR remote; and a back-lit display

**VERDICT:** A handy gadget with great capacity for the multimedia user on the move.

**QUALITY** ..... 1 2 3 4 5
**FEATURES** .... 1 2 3 4 5
**VALUE** ..... 1 2 3 4 5
**OVERALL** ..... 1 2 3 4 5

# MYOB BUSINESS BASICS

**ACCOUNTING**

**PRICE:** $199
**SUPPLIER:** MYOB
(02) 9770 9000
**INTERNET:**
www.myob.com.au
**REQUIREMENTS:** Pentium 200MHz; Windows 98 or later; Windows NT 4.0 with service pack 6.0; 200MB disk space; Internet Explorer or Netscape Navigator 4.0 or higher

**VERDICT:** What small operators and sole traders have been crying out for – a low cost version of MYOB that sticks to the basics.

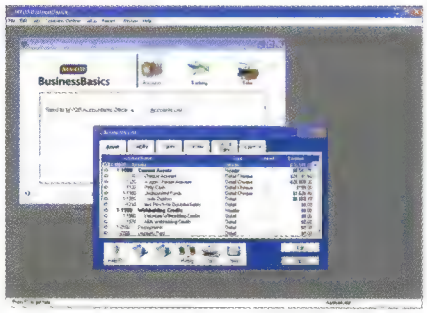
**EASE OF USE** .. 1 2 3 4 5 6
**FEATURES** .... 1 2 3 4 5 6
**VALUE** ..... 1 2 3 4 5 6
**OVERALL** ..... 1 2 3 4 5 6

When Quicken decided to revamp its range and take on MYOB's Premier products with its new look QuickBooks Pro, MYOB countered by stepping into Quickens traditional turf at the lower end of the price range.

MYOB's new Business Basics is aimed squarely at Quicken Cashbook and QuickBooks and is going to give them quite a shake up. It might also backfire on MYOB in some sectors of its market as small operators find benefit in 'downgrading' to the cheaper product.

It takes about 30 minutes to set up and anybody who has used any of the MYOB range before will find it a breeze to use.

However, I've never been a great fan of MYOB's interface and newcomers might find it a bit difficult to find their way around at first. It is not as intuitive as some of its competitors, but once users come to grips with the 'MYOB culture' they will find it is not as complex as it looks. The program will do everything a small trader wants – keep track of incomings and outgoings, create invoices and quotes, and provide a range of essential reports. Unlike QuickBooks, which has lost the old remittance advice from the bottom of its invoices, Business Basics does the opposite.




Anyone who has used MYOB will quickly come to grips with Business Basics.

It provides a remittance advice with multiple payment options including Bpay, credit card by phone payment, and cash or EFTPOS using POSTbillpay and the standard 'put the cheque in the mail'.

Like QuickBooks, Business Basics allows you to email invoices and quotes direct to customers as PDF attachments; and send reports and data to your accountant.

If you have kept your books in order during the month or quarter, your business activity statement will automatically be reconciled at tax time so all you will have to do is copy the figures over on to the official form.

Overall it provides enough for small operators, and at $199 it is a better buy than other accounting products with features you'll never use, but are for four or five times the price.

**David Hellaby**

# QUICKBOOKS PRO

**ACCOUNTING**

**PRICE:** Upgrade $685; full copy $1,495
**SUPPLIER:** Reckon
(02) 9577 5000
**INTERNET:**
www.quicken.com.au
**REQUIREMENTS:** 250MHz Pentium (350MHz recommended); 64MB RAM; 250MB hard disk space; Internet Explorer 6.0; and Windows 98/ME/NT4.0 (SP7a)/2000/XP

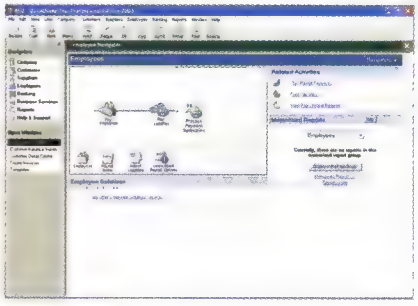
**VERDICT:** Restructuring of the QuickBooks range means this is now going head-to-head with MYOB Premier and is a worthy rival.

**EASE OF USE** .. 1 2 3 4 5 6
**FEATURES** .... 1 2 3 4 5 6
**VALUE** ..... 1 2 3 4 5 6
**OVERALL** ..... 1 2 3 4 5 6

The slump in the accounting software market since the heady days leading up to the introduction of GST has seen the major players completely revamp their products. For example, QuickBooks Pro once sold for less than half its current price and was designed for small business. Today it is aimed at medium-sized enterprises and comes with five licences and an integrated full payroll function. Small businesses are now offered a choice of QuickBooks or QuickBooks Plus but have lost some of the features they once had, such as job costing.

There have been several changes made to QuickBooks this year apart from the integration of the payroll. Transaction auditing has been improved; you can now create assembly items; report templates can be customised and reconciliation reporting has been enhanced. Journals are now automatically numbered and are easier to reverse, and you can create multiple estimates for a single job.

There is one other unfathomable change. For some unknown reason Quicken has dropped the Remittance Advice option from the bottom of its invoice templates and if you upgrade to the current version you will suddenly find it missing.



The new integrated payroll can be tricky to set up and difficult to come to grips with.

But it is the payroll feature and five licences that Quicken is relying on to sell the product. The idea is that if you set up the payroll during the Easy Step interview, you will be able to run payroll from navigator or menu options within QuickBooks allowing simultaneous updating of your accounts with the payroll data. The payroll allows for tracking of leave, superannuation, deductions and allowances, the printing of pay slips, cheques and ATO payment advices. However, if you have not set up a payroll before, this can be quite a tough job and even experienced users have found the new QuickBooks payroll a bit tricky, which is a pity because most of the rest of the program is fairly intuitive.

Overall, it stands up well against MYOB Premier, which offers three licences instead of five, but has a multi currency option that's not found in QuickBooks Pro.

**David Hellaby**

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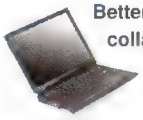

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(27232FM)

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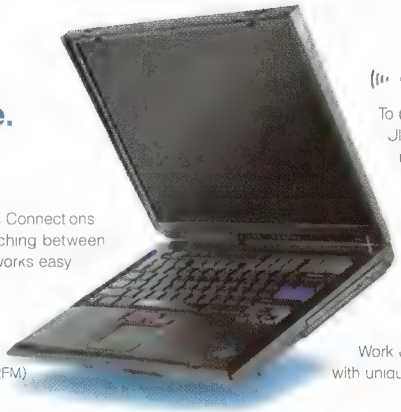

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(27232FM)

## IBM ThinkPad R40

**System Specifications:**

- **Intel® Centrino™ Mobile Technology**
  - Intel® Pentium® M processor 1.3GHz
  - Intel® PRO/Wireless Network Connection 80211b
  - Intel® 855 chipset family
- 256MB PC2100 DDR SDRAM
- 20GB® Hard Drive
- 14.1" XGA TFT Display (1024x768)
- 8x (Max) DVD-ROM (interchangeable)
- 56K Modem & 10/100 Ethernet
- Microsoft® Windows® XP Professional
- 16MB ATI Mobility RADEON 7000 graphics
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- IBM Embedded Security Subsystem, UltraNav Pointing Device, Hot Swap Optical Drive, 2x USB 2.0 ports

**$2,999*** Lease from $29.41^p/w
Model No. 27232FM

**Warranty:**
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## IBM ThinkPad R40

**System Specifications:**

- **Intel® Centrino™ Mobile Technology**
  - Intel® Pentium® M processor 1.4GHz
  - Intel® PRO/Wireless Network Connection 80211b
  - Intel® 855 chipset family
- 256MB PC2100 DDR SDRAM
- 40GB® Hard Drive
- 15" XGA TFT Display (1024x768)
- 8x (Max) DVD-ROM (interchangeable)
- 56K Modem & 10/100 Ethernet
- Microsoft® Windows® XP Professional
- 32MB ATI Mobility RADEON 7500 graphics
- Norton AntiVirus 2003 (OEM Edition)*, PC-Doctor®, IBM Rapid Restore PC, Access IBM
- IBM Embedded Security Subsystem, UltraNav Pointing Device, Hot Swap Optical Drive, 2x USB 2.0 ports

**$3,599*** Lease from $34.05^p/w
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**Warranty:**
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## IBM ThinkPad T40

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  - Intel® PRO/Wireless Network Connection 80211b
  - Intel® 855 chipset family
- 256MB PC2100 DDR SDRAM
- 30GB® Hard Drive
- 14.1" XGA TFT Display (1024x768)
- 8x (Max) DVD-ROM (interchangeable)
- 56K Modem & 10/100 Ethernet
- Microsoft® Windows® XP Professional®
- 16MB ATI Mobility RADEON 7500 graphics
- Norton AntiVirus 2003 (OEM Edition)* PC-Doctor,® IBM Rapid Restore PC, Access IBM®
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Upgrade to model No 237372M with Intel® Pentium® M 1.5GHz 40GB high speed HDD, CDRW/DVD combo drive, 32MB graphics and Gigabit Ethernet for $4,399*

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- 4x USB 2.0 ports TrackPoint Pointing Device, ThinkPad EasyPivot Base and ThinkPad ComfortSlant Keyboard

**$1,999*** Lease from $20.30^p/w
Model No. 23882BM

**Warranty:**
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# BUSINESS BREEZE

## ACCOUNTING

**PRICE:** $329
**SUPPLIER:** Manaccom
(07) 3870 4900
**INTERNET:**
www.manac.com.au
**REQUIREMENTS:** 486/33 PC or better; Windows 95 or later or Windows NT 4.0 with Service Pack 3.0. Power Macintosh or Mac OS computer with PPC 601 processor or higher; 16MB of RAM; CD Drive; and 24MB of hard drive space

**VERDICT:** A locally produced and relatively new entrant in the market – and one well worth a look.

**EASE OF USE** .. 1 2 3 4 5
**FEATURES** .... 1 2 3 4
**VALUE** ..... 1 2 3 4
**OVERALL** ..... 1 2 3 4

Accounting software is a tough market to get into and is littered with the carcasses of many who had tried and failed to take on the established giants in Quicken and MYOB. Business Breeze is a locally designed product specifically aimed at the small business market.

It has been developed with a typically Aussie no-nonsense attitude – forget fancy features, just make it easy to use and that's why it should succeed.

It has a simple and straight forward menu. If you want to make a cashbook entry click on Cash Book; if you want to write and invoice, click on invoicing; if you want to pay staff, then click on payroll. It's all in one menu.

In keeping with the simplicity theme, the user manual can be lifted without having to bend your knees. It's 34 pages, but still shows you the fundamentals.

As long as you have a basic understanding of bookkeeping you should be able to master Business Breeze in under an hour and that means no added expense and lost time associated with having to go through a training course to learn the program.

When you do a job or sell a product, you write an invoice. When it's paid, you enter the payment. When you pay a bill you enter the amount and as long as you put in the correct tax codes, Business Breeze does the rest.

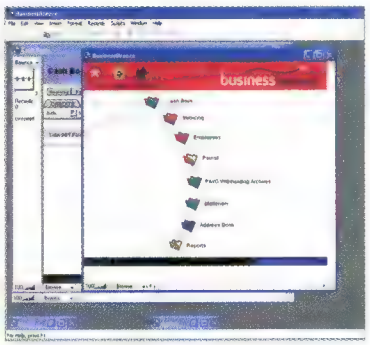
The payroll module is a breeze compared to QuickBooks Pro and MYOB. Once you have created an employee on your books just fill in their time sheets, rate of pay, tax rate etc, and it will calculate overtime and superannuation deductions.

Business Breeze allows you to create your own stationery, just as long as you don't want to get too fancy.

While it does not have the nice looking interface of QuickBooks, it is easy to navigate and does the basics well.

At $329, which includes the payroll module, it compares favourably with MYOB's new Business Basics. The only problem is that at this stage it does not have the loyalty base of MYOB and may struggle.

**David Hellaby**



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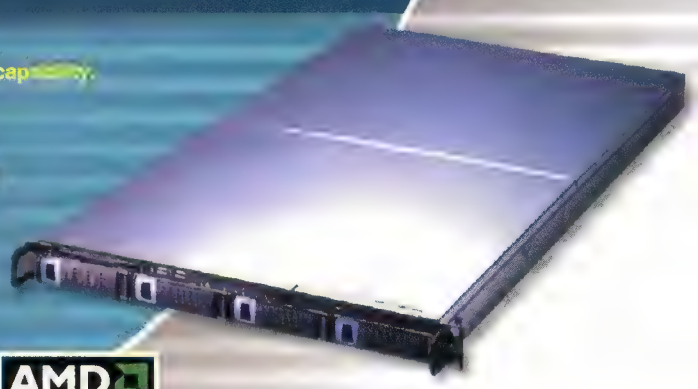

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- Advanced Firewall Features
- Configuration & Management via Web Browser

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- Telstra Approved

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- Signal Parallel Port Print Server
- Support NAT for single IP address & Firewall Protection
- Supports DHCP, VPN, PPP, PAP/CHAP Security
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- Connect single or multiple PC's on an Ethernet LAN to an ADSL service
- 10BaseT Interface (RJ45), ADSL Interface (RJ11)
- Support G.dmt and G.lite
- PPPoE (RFC 2516) & PPPoA (RFC 2364)
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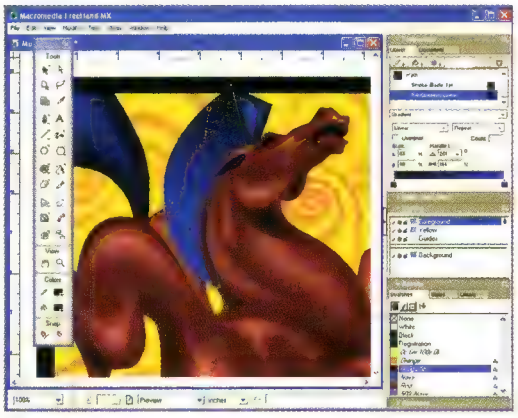
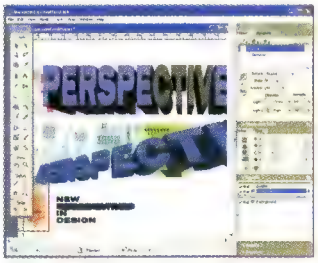
# MACROMEDIA FREEHAND MX



The new streamlined interface and Object panel put you firmly in control of your work.




The Extrude tool offers the most striking new effect.

## VECTOR DRAWING

**PRICE:** $795; upgrade $297
**SUPPLIER:** Macromedia
**INTERNET:** www.macromedia.com.au
**REQUIREMENTS:** Pentium II 233MHz; 64MB of RAM; 70MB hard disk; Windows 98/ME/NT/2000/XP

**VERDICT:** With its streamlined interface, seriously enhanced formatting, expanded toolset and improved integration, FreeHand is back with a bang.

**EASE OF USE** .. 1 2 3 4 5 6
**FEATURES** .... 1 2 3 4 5
**VALUE** ..... 1 2 3 4 5
**OVERALL** ..... 1 2 3 4 5

PC AUTHORITY RECOMMENDED JULY 2003

THIS PRODUCT IS ON THE A-LIST

FreeHand has had a long, distinguished career since its launch 15 years ago, but time has caught up with it. While Macromedia concentrated development on its Web-oriented MX applications, FreeHand was put on the back burner and fell seriously behind its main rivals CorelDRAW (see *issue 60, p54*) and Adobe Illustrator (see *issue 51, p88*). So, is this latest release evidence of further decline, or has FreeHand finally risen to the challenge?

One of the surest signs of FreeHand's age – and Macromedia's lack of interest – was the program's antiquated and unhelpful interface. But the working environment has now been given the full MX treatment, with the previously free-floating palettes conveniently docked and arranged into collapsible panel groups. There are still occasional idiosyncrasies, such as the dedicated Halftones panel, but the new shared Spell Checker and Answers panel reinforces the cross-application MX identity, boosting efficiency.

The biggest boost comes from the new Object panel. This incorporates the features of the former Object, Fill, Stroke and Text Inspectors into one central panel for controlling everything about your design elements' appearance. The way FreeHand MX manages its formatting has also been radically overhauled. In particular, objects now support multiple attributes, allowing you to add more than one stroke and fill to your object. Each attribute is listed at the top of the Object panel, and each can be quickly formatted.

The range of formatting power has also been enhanced. For its fills, FreeHand MX includes support for the latest Pantone libraries, as well as two new gradient types: Cone and Rectangle. Gradient handling has also been greatly improved, with four new behaviours: Normal, Repeat, Reflect and Auto Size. These determine how the gradient fills its object, and the introduction of Fill Handles lets you interactively change the direction and centre of your gradient. FreeHand MX also offers smoother brush paths and a new Calligraphic option, which produces naturalistic line effects by using any object shape as a customisable nib.

FreeHand's Object panel not only allows you to add and control fills and strokes, but can also apply an entirely new kind of formatting attribute to your design elements – Live Effects. These change the object's appearance, or just its fill or stroke, but non-destructively. So you can always alter parameters to fine-tune the effect or remove it entirely. The flexibility and creativity this opens up is extraordinary, especially as FreeHand offers vector and bitmap-based effects.

## Special effects

Of the six vector options, the Bend, Ragged and Sketch effects all distort and randomise lines to give a less clinical feel to your artwork, while the Expand Path command lets you widen strokes and add fill-based formatting. The Duet effect is particularly striking, enabling the creation of arrangements based on clones of the current object. Transform is the most workaday effect, but also the most useful as it allows you to apply scaling, skewing, rotation and positioning effects as an object attribute.

The raster effects are even more welcome, however, as they enable bitmap-based formatting within FreeHand's vector-based environment. The Blur and Sharpen effects are self-explanatory, while the Bevel, Emboss, Shadow and Glow filters will be familiar to Fireworks users. The Transparency effect is the most powerful of all, as it expands FreeHand's existing lens-based approach by enabling feathered and gradient transparencies.

Put FreeHand's new support for multiple fills, strokes and effects together and it's possible to create some amazingly rich formatting very quickly. Plus, once you've created an appearance you like, simply drag it onto the Styles palette ready to apply to any other object. You can also quickly redefine existing styles by editing an instance and then dragging it back onto the palette – all objects that share the style are automatically updated.

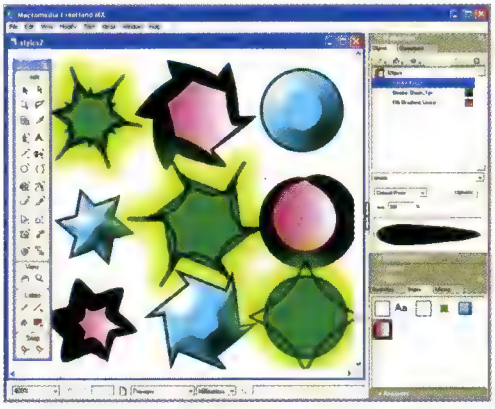
FreeHand's new approach to formatting is undoubtedly powerful, but it's worth pointing out that the real credit for this belongs to Adobe, which pioneered the system in Illustrator. Of the two implementations, Illustrator remains the more creatively powerful with its support for features such as blend modes and Photoshop filters, but the FreeHand system is simpler to manage. Regardless of which company deserves the credit, there's no question that it takes FreeHand's creative power to a new level.

## New tools

And that's before we look at FreeHand MX's revamped toolset. It's unrecognisable at first, as nearly all the old tools have been replaced by new offerings. This is largely due to a much-needed rationalisation, which sees linked tools (such as the various transformation tools) grouped in flyouts; former tool variants (such as the Pen tool's Variable Line and Calligraphic variations) promoted to standalone tools; and many of

the previously semi-detached Xtras (such as the Roughen, Smudge, Shadow and 3D Rotation tools) incorporated into the toolbox.

Other changes to the toolset are less obvious but more fundamental. FreeHand's core drawing capability has been improved with a new rubber-banding feature for the Pen tool, letting you preview the next line segment. There's also a new Snap to Object feature to work alongside Snap to Grid. FreeHand MX's core shapes – rectangles, circles and polygons – have also been given Live-Edit intelligence, so you can quickly turn them into rounded rectangles, arcs and stars.



Combinations of fills, strokes and effects can be saved as reusable styles.

There are also plenty of new tools. The Eraser works like a rubber to delete the portion of the vector path it passes over. The Connector Lines tool lets you drag-and-drop connecting lines between objects that automatically adapt as you move the objects – useful for flow diagrams. There's also a new Output Area tool that lets you set an area of a page for outputting to print or exporting. You can also mark up a series of pages in the same way – a reminder that, unlike Illustrator, FreeHand supports multiple pages.

FreeHand MX also features two new effects-based tools. The point-and-click Blend tool offers a quick and interactive way of setting up blends – simple but very effective. The Extrude tool applies 3D depth to an object by simply dragging to specify a distance and direction. Once the main effect is set up, you can double click on the object and rotate it in 3D space while using the Object panel. A variation I haven't seen before is the ability to apply path-based profiles to the extrusion, which enables 3D lathing effects and the creation of realistic objects such as vases.

The Extrude tool is surprisingly powerful and, with the ability to share vanishing points, makes an excellent partner to FreeHand's existing Perspective tool for producing pseudo-3D artwork. It's certainly the highlight of FreeHand's improved new toolset, but again a sense of deja vu is unavoidable. This time it's CorelDRAW that largely deserves the credit, as nearly all the new tools and handling seem to be straight lifts. Again, FreeHand users won't be worried about that – they'll just want to get stuck in.

## Bitmap handling

FreeHand's major weakness has always been its bitmap handling, and this version still lacks the ability to apply colour corrections or filters to bitmaps. You can forget Deneba Canvas-style pixel-based editing, but it does now support alpha-channel transparency for imported TIFF, PSD, PNG and GIF files. This might not sound important, but it's essential for producing layouts that seamlessly combine bitmaps and vectors.

Rather than offering its own internal bitmap power, FreeHand relies on the user having access to an external editor. Ideally, of course, you'll be using Studio MX Plus with Fireworks MX. Bitmap images in any format can now be opened in Fireworks with a single click in the Object panel and then automatically updated. The support for Fireworks' PNG format is particularly strong; I was amazed when I imported a test file and the text, objects and their raster-based styles all remained editable. The round tripping is just as advanced in reverse, as Fireworks MX can directly open and edit FreeHand MX files too.

Most users, however, will be most interested in the integration with Flash MX. This was already strong in version 10, with features such as a Flash-style, antialiased preview option, support for symbols, built-in previewing and advanced SWF export. These capabilities have been improved across the board: the antialiased display is now the default; you can replace objects with symbols just as you can in Flash; the Test Movie window now offers built-in navigation controls and one-click exporting; and the SWF Export settings have been rationalised, although the ability to save to earlier versions is gone.

New additions make the integration tighter still. The new Action tool allows you to drag from any object to any page, automatically creating Go To links – ideal for producing presentations. For more advanced power, you need to turn to FreeHand's Navigation palette. This has been revamped and offers greater ActionScript power – including Load and Unload Movie support – to add more advanced interactivity to your designs.

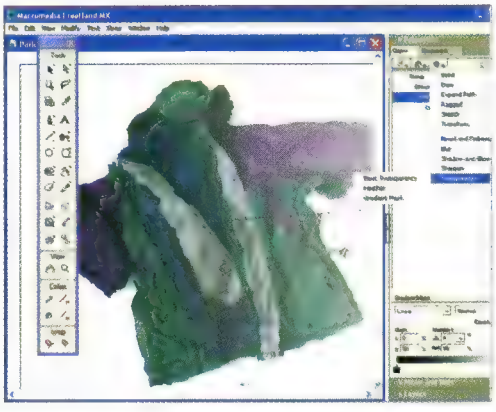
Of course, FreeHand can never hope to compete with Flash on this front, so the most important new feature is the ability to import SWF files into your FreeHand layouts. Embedded SWFs appear as snapshots in your page, preview correctly during testing and are re-exported as movie clips when you publish your movie. Even better, with a single click in the Object panel you can open the SWF's associated FLA file directly into Flash with all edits automatically updated. Not suprisingly, FreeHand MX files can also be in the same manner.

FreeHand still doesn't lead the pack for innovation or creativity, but this latest release recovers all the lost ground.

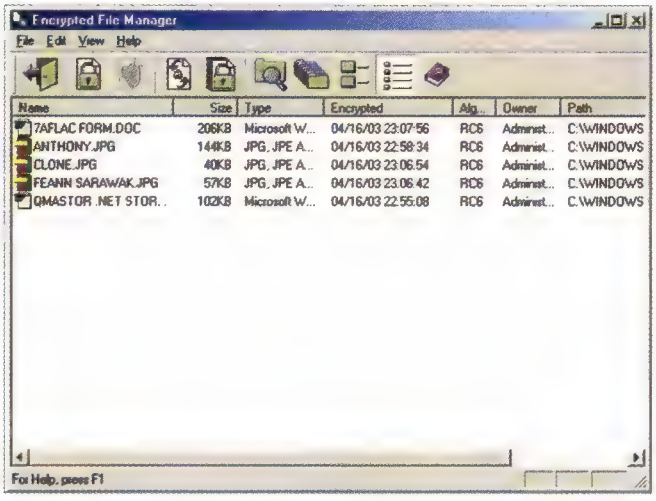
If you want to produce design-intensive work for both print and the Web, FreeHand MX is now your best option – most obviously via the new Studio MX Plus bundle, which includes Flash, Fireworks, Dreamweaver and a copy of Contribute as well. By combining the streamlined MX interface with Illustrator's visually rich formatting and styling, and CorelDRAW's extensive toolset and effects, this upgrade is a revelation.

**Tom Arah**

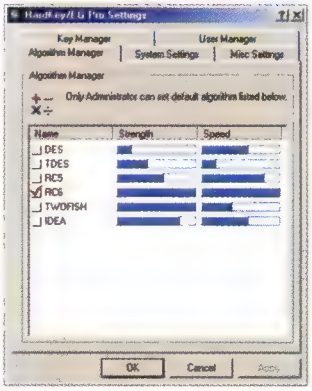
Non-destructive vector and raster effects radically boost FreeHand's formatting power.



# HARDKEY/EG PRO




The Encryption Manager gives details of encrypted files and folders.




Various types of encryption standards are available.

This USB key is exceptionally small and easy to lose – beware!

## ENCRYPTION DEVICE

**PRICE:** $199.95
**SUPPLIER:**
Success Storm
**INTERNET:**
www.successstorm.com.au
**REQUIREMENTS:** Pentium or higher; USB port; 10MB hard disk space; Windows 98/ME/XP/ 2000

**VERDICT:** Well made, easy to use and a highly robust Net/desktop encryption solution. Flexible and simple, it might worth the price if the manual was half decent.

**QUALITY** ..... 1 2 3 4 5
**FEATURES** .... 1 2 3 4 5
**VALUE** ..... 1 2 3 4 5
**OVERALL** ..... 1 2 3 4 5

The HardKey/EG Pro is a combination of USB dongle and software together encrypting files or systems keeping your data safe from prying eyes.

When you open the package, you'll notice straight away that you don't get much for your money. Two hundred bucks for a CD, a tiny plug-in USB dongle and a very slim manual. But as with many digital devices, small is usually beautiful.

It does however do a very effective job of protecting your data from those who might want to access it – including yourself if you lose the dongle. Encryption is 128-bit, so you can kiss your data goodbye if the USB HardKey vanishes into the aether. Luckily it comes with a hole for a cord so you can hang it round your neck and keep it close by.

The USB key is equipped with a tiny green LED to show it is working when inserted. Once recognised by the OS and the drivers located, it can be hot-plugged in and out as often as required – even while using encrypted files.

Installation is a fairly straightforward process. Slot in the CD, load the key control software and have a browse through the CD-based manual if you feel like it. However, most users should get to the 'reboot your PC now' stage without needing assistance. The program then launches the Key Generation Wizard which does a good job of taking you through the generation of up to 20 logical keys for different users, and for online users' public keys for file access over the Net.

During this process the passwords and their associated key IDs can be stored on removable media – the program suggests a floppy disk – so you can invoke a rescue file in case of memory lapses. While this is useful, the included Basic User Guide is not, and can only be described as a dog. If it was any less effective, it would bark. About the same size as a sheet of toilet paper (coincidence?), it looks like a badly-trimmed, laser-printed fortune cookie.

Half the bottom line was missing and the print quality was shocking. To include it with such a decent product is ridiculous. Luckily, the CD-based manual is noticeably better, with decent screenshots and step-by-step instructions.

In use – that's with the HardKey dongle plugged in – the system behaves normally; but if a file is accessed via Explorer, two extra menu items pop up on right clicking. These offer either immediate encryption, or Net encryption for sending to a public access key holder. If the file is encrypted, it can only be accessed when the HardKey is plugged in. Although it appears as a standard file, any attempts to open it throw up a 'No access' or 'File in use' error message if no dongle is present. Plug the dongle in, and the file is instantly accessible. Even unplugging the HardKey with an encrypted file open under its application does not faze the digital smarts – it simply reverts to encrypted once closed.

However, not so impressive is the fact that if an encrypted file is moved to another drive it becomes open access.

Likewise, if an encrypted file is opened and changed, the encryption is lost. In both cases the file needs secondary encryption – a bit tedious.

This applies even though the file is still listed as encrypted in the HardKey file manger applet. Admittedly the files cannot be opened or moved without the HardKey in the first place, but this aspect is a nuisance easily leading to accidental decryption of files.

The effect of this is diminished by using an encrypted folder. All files saved or moved to this folder are encrypted by default.

The software allows a selection of encryption algorithms: DES, TDES, RC5, RC6, TWOFISH, and IDEA are all selectable. Right clicking on any file displays it's properties and encryption details.

One neat extra is the screensaver. Right click on the System Tray icon, and set the screensaver to 'on'. As soon as you remove the HardKey the computer screen is blanked and the keyboard locked.

Extremely effective; just plug the HardKey back in and everything is immediately accessible again.

Overall, a solid, simple and effective security device.

**Jeremy Torr**

"I never realised the simple act of plugging my PC into a power point would expose it to damaging problems"

- **Lee Johnson**, Home PC User

$200,000

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*"The APC Back-UPS® CS keeps my business up and running regardless of the situation behind the plug in the wall. It integrates smoothly with Windows XP, leaving me free to focus on my business, rather than on the technology."*

**John Nagle, Small Business Owner**

"*The spikes and surges coming in through the power socket were actually causing screen freezes, lock-ups, and other annoying problems.*"

- Lee Johnson, Home PC User

Do you experience similar PC problems? Keyboard lock-ups and frozen monitors are usually caused by bad power, which can threaten your PC up to four times a day.[1] In addition, surges, sags and blackouts are nine times more likely to strike your PC than a virus[2] and are not just generated from lightning strikes. Something as simple as switching on a heavy appliance inside your home can jeopardise both your hardware and data. In fact, power disturbances are the largest single cause of data loss accounting for 45.3% of problems.[3]

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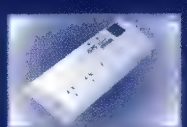

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- IEEE 1394 x 2 ports
- 3COM Gig Lan supporting 10/100/1000 BASE-T Ethernet
- Virtual Cable Tester Net-Diagnosing Utility
- Intel ICH5R 2 SATA ports & 2 channel ATA100 IDE
- Promise 20378 ATA133/SATA RAID controller
- AGP Pro/8X, 8 x USB 2.0 ports.

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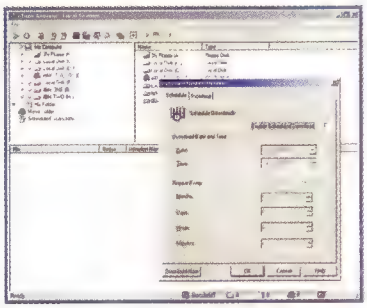
# CA ETRUST ANTIVIRUS V7

Computer Associates (CA) is one of the biggest names in the software industry, even compared to Microsoft. Most of its business is done in the enterprise and corporate field, and this heritage shows in eTrust Antivirus.

Although the program sells for a consumer-friendly $59, it is loaded with high-level capability and options for the network administrator. The software pack comes with versions for Pocket PC, Mac, NetWare, Solaris, Linux, Lotus Notes, and Exchange Server as standard. Plus, if that isn't enough you can download a Palm version from the Website.

Originally developed by Aussie firm VET, eTrust offers two separate scan engines for antivirus and inoculation, plus the usual Web-based updates for new signatures. CA says this avoids the increasingly common situation where smart viruses cripple or infiltrate the AV engine. In addition, the program allows for remote installation and management of virus scanning, making it ideal for large networks. eTrust also incorporates some high-strength user conformance utilities that help stop the most common virus entry point – the irresponsible user at the desktop. These options offer enforcement of policy restrictions over floppy access and Web usage as well as configuration of scan and updates (which incidentally are sent at the same time as they are added into the CA database, not just on a daily basis).



The Explorer-like interface scan-accesses everything including removable drives.

The initial scan performed on our test machine took a swift six minutes, and identified existing infected files with no problem. Scanning the PC is initiated from a simple Explorer-like interface, which allows selection of scan routines down to individual file level if required. A right click 'Scan directory' option is also available from the standard Windows Explorer window, and a realtime monitor in the System Tray checks all incoming and outgoing Net traffic for potential threats. In use eTrust was fast and recognised all connected devices.

Overall, eTrust is a thorough and highly configurable AV option suitable for standalone and power/network users.

**Jeremy Torr**

## ANTIVIRUS

**PRICE:** $59
**SUPPLIER:** Computer Associates 1800 999 985
**INTERNET:** http://ca.com/etrust
**REQUIREMENTS:** Pentium 100MHz or higher; 32MB RAM; 25MB of hard disk space; and Windows 95/98/NT/XP/2000/ME

**VERDICT:** Fast, thorough and very customisable. So many versions available to suite the most varied OS options. Good value too, with one year's free signature updates included in the price.

**EASE OF USE** .. 1 2 3 4 5
**FEATURES** .... 1 2 3 4 5
**VALUE** ..... 1 2 3 4 5
**OVERALL** ..... 1 2 3 4 5

# CREO SIX DEGREES 1.51

The only problem with email is that it's difficult to sort through them or track down any important attachments.

Creo believes it has the solution in Six Degrees which can track down attachments and emails quickly by building relationships.

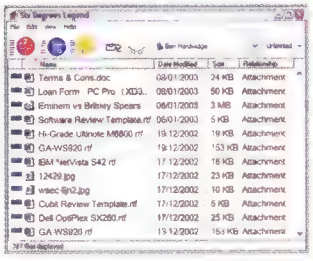
Six Degrees constructs a database of links between email addresses, messages and attachments during installation. It's a slow process, but this is the only time that Six Degrees leaves you waiting. It will take a couple of minutes of hard disk chugging before it's finished, but afterwards Six Degrees actively synchronises the database and takes virtually no time to call up the links. In fact, it's unbelievably quick – everything comes up almost instantly. You can say goodbye to re-sorting your emails by sender and wading through to find the attachment you're after.

The interface is as basic as it gets: three buttons at the top show attachments, messages or people, along with a search bar. So, if you want to find a lost attachment from a specific person, just type the name in the search bar, right click on the contact result that appears, click Make Focus, and all the attachments and emails come up in the appropriate fields.

This is easy enough, but you can't help feeling that this could have been sped up. Why not automate the whole process so it displays all the attachments and emails instantly without having to click Make Focus?

This is certainly sensible if you have thousands of emails about a particular subject, or several people with the same name sending you emails. But it would still be better to have complete automation as an option, particularly as you can limit the results by refining them to cover only the last week, month, six months or year.

Another annoyance is that it only works with the 2000 and XP versions of Outlook and Windows.



Six Degrees finds lost email attachments in no time, wherever they've been stored.

Also, if Outlook automatically moves messages to other folders (including Deleted Items), Six Degrees loses track of them.

But these complaints are only minor, and Six Degrees is otherwise a very impressive and useful tool. The potential for boosting productivity is enormous, and not having to trawl through your emails and sit through Outlook's painful search process is nothing short of a godsend.

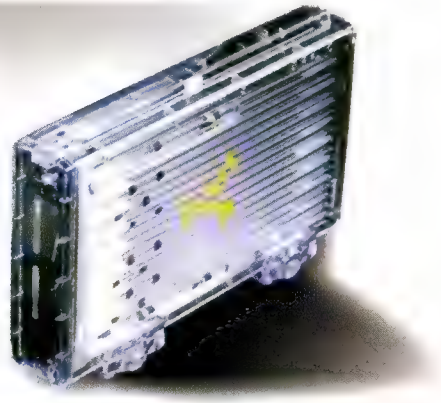
**Ben Hardwidge**

## UTILITY

**PRICE:** US$149; volume licenses available
**SUPPLIER:** Creo
**INTERNET:** www.creo.com
**REQUIREMENTS:** Pentium III 450MHz; 128MB RAM; 26MB hard disk space; Windows 2000 or XP

**VERDICT:** Makes light work of finding lost attachments and emails, but some more flexibility could make things even quicker.

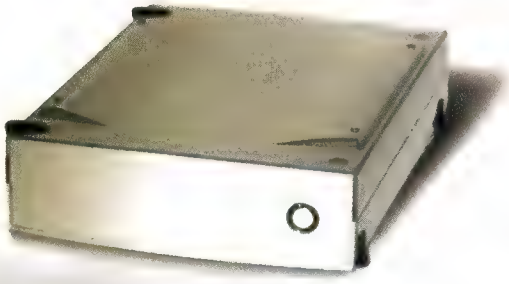
**EASE OF USE** .. 1 2 3 4 5
**FEATURES** .... 1 2 3 4
**VALUE** ..... 1 2 3 4
**OVERALL** ..... 1 2 3 4



**IceCube** 3.5" External Hard Drives are the ultimate bandwidth pumping big drives in the coolest casing.

Available formats: USB 2.0
FireWire
USB 2.0 and FireWire Combo
FireWire 800

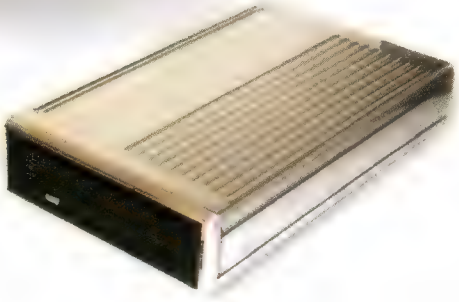
Drive sizes available up to 250GB 7200rpm 2MB Cache / 8MB Cache / ATA 100



**MantaRay** 3.5" External Hard Drives feature a superb quality internal power supply, and internal fan to vent hot air from the box, and to provide air flow around the hard drive, a hardcore and stringent product for serious users.

Available formats: USB 2.0
FireWire
USB 2.0 and FireWire Combo
FireWire 800

Drive sizes available up to 250GB 7200rpm 2MB Cache / 8MB Cache / ATA 100



**HotButtered** 5.25" External Enclosures for CD-R/RW or DVD-R/RW or DVD+R/RW. Hot looking slimline casing utilising latest chipsets to maximise speed, reliability, and high performance of the lastest Burners and DVDRW.

Available formats: USB 2.0
FireWire

Experience the ease of portable storage the way it should be. True plug n play, superbly designed mobile solutions with outstanding speed and performance. For entire machine backups that you want to take home, or sharing files with friends, or for even that mission critical job when you need hours of storage and need to do some fast editing. Our full range of products are designed with you in mind. So whether you are a home user, a technician, a project manager, a teacher, a designer, or even filmmaker, we have a portable storage solution that's right for you.

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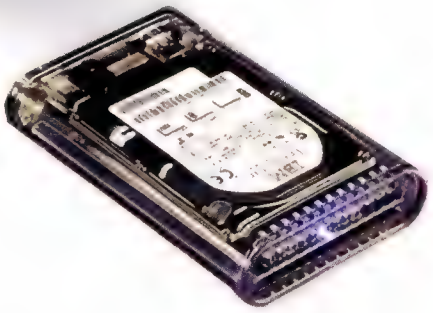


**Clearlight** 2.5" External Hard Drives are fully portable, truly sexy, totally unique, and made from tough durable clear polycarbonate. The ultimate desk accessory.

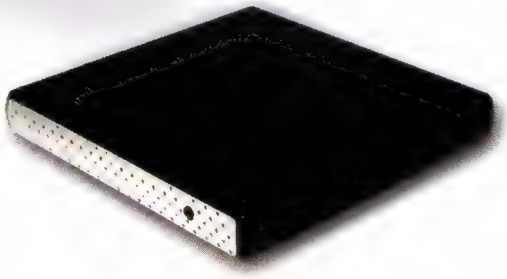
Available formats: USB 2.0
FireWire
USB 2.0 and FireWire Combo

Drive sizes available up to 60GB. 4200rpm 2MB Cache / 5400rpm 8MB Cache / ATA 100

**DaisyCutter** 2.5" External Hard Drives are the tiniest of the bunch. Just put it in your pocket and walk away with huge amounts of data.

Available formats: USB 2.0
FireWire
USB 2.0 and FireWire Combo

Drive sizes available up to 60GB. 4200rpm 2MB Cache / 5400rpm 8MB Cache / ATA 100



**Cold Chisel** CDRW/DVD-ROM
The ultimate slim portable Writer/Reader.
A tiny 13.7cm x 13.7cm x 20cm.

Available formats: USB 2.0
FireWire

8x DVD-ROM Read
24x CD-R Write
12x CD-RW ReWrite
24x CD-ROM Read

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## ARTICLES

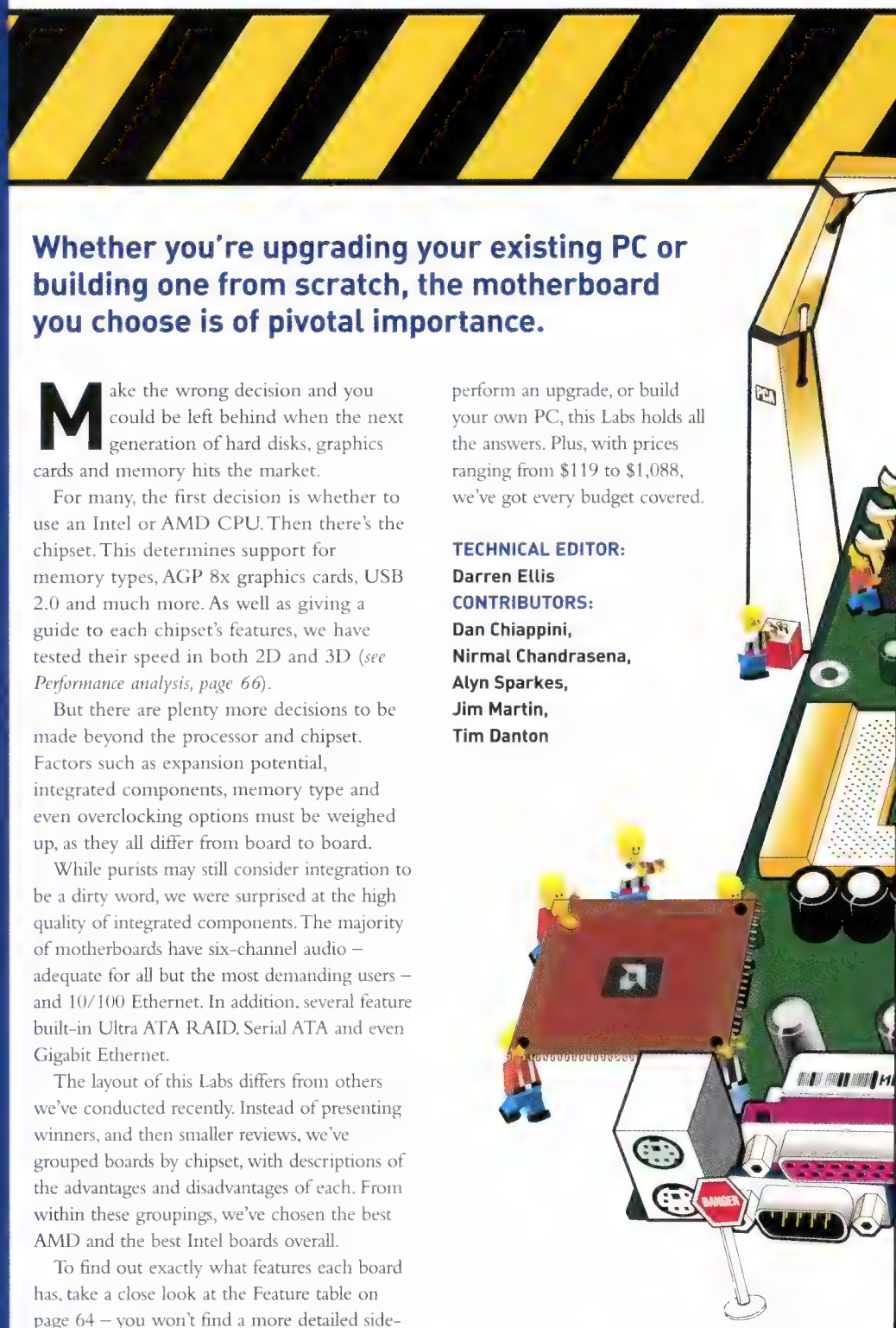

Features Table ..... 64
Performance Analysis ..... 66
Bye BIOS! ..... 72


## CHIPSETS


Intel E7205 ..... 84
Intel 845PE ..... 73
Intel 865 ..... 74
Intel 865G ..... 74
Intel 865PE ..... 74
Intel 875 ..... 81
Intel 875P ..... 81
NVIDIA nForce2 ..... 69
SiS648 ..... 84
SiS655 ..... 83
VIA KT400 ..... 68
VIA KT400A ..... 68


## MOTHERBOARDS


ABIT BH7 ..... 73
ABIT IC7 ..... 81
ABIT IC7-G ..... 81
ABIT KD7-SL ..... 68
ABIT NF7-M ..... 69
ABIT SR7-8X ..... 84
Albatron Intel 865PE Pro II ..... 74
AOpen AX4C Max ..... 81
AOpen AX4SG Max ..... 74
Asus A7N8X Deluxe ..... 69
Asus P4C800 Deluxe ..... 81
Asus P4G8X Deluxe ..... 84
Asus P4PE ..... 73
ECS Elitegroup L4IPEA2 ..... 73
ePoX 4PCA3 ..... 74
ePoX 4PDA2+ ..... 83
Gigabyte 7NNXP ..... 69
Gigabyte 7VAXPA Ultra ..... 68
Gigabyte 8KNXP Ultra ..... 83
Gigabyte 8PENXP ..... 77
Gigabyte SINXP1394 ..... 83
Leadtek WinFast K7NCR18G ..... 72
MSI 655 Max-FISR ..... 83
MSI K7N2 Delta-FISR ..... 72
MSI KT4A Ultra-FISR ..... 68
QDI P4I865PEA-6AFL ..... 77
QDI P4I865GMA-6AFL ..... 77
Shuttle AB48N ..... 73
Shuttle AB60RS ..... 77
Shuttle AK39N ..... 68
Shuttle MN31N ..... 72
Soltek 86MP-L ..... 77
Soltek SL-75FRN2-L ..... 72
Soltek SL-75MRN-L ..... 72
Soltek SL-85DR3-R ..... 74
Soltek SL-86SPE-L ..... 77
Soltek SL-KT400A-L ..... 69
TYAN Trinity S266AN ..... 84


## Whether you're upgrading your existing PC or building one from scratch, the motherboard you choose is of pivotal importance.

Make the wrong decision and you could be left behind when the next generation of hard disks, graphics cards and memory hits the market.

For many, the first decision is whether to use an Intel or AMD CPU. Then there's the chipset. This determines support for memory types, AGP 8x graphics cards, USB 2.0 and much more. As well as giving a guide to each chipset's features, we have tested their speed in both 2D and 3D (*see Performance analysis, page 66*).

But there are plenty more decisions to be made beyond the processor and chipset. Factors such as expansion potential, integrated components, memory type and even overclocking options must be weighed up, as they all differ from board to board.

While purists may still consider integration to be a dirty word, we were surprised at the high quality of integrated components. The majority of motherboards have six-channel audio – adequate for all but the most demanding users – and 10/100 Ethernet. In addition, several feature built-in Ultra ATA RAID, Serial ATA and even Gigabit Ethernet.

The layout of this Labs differs from others we've conducted recently. Instead of presenting winners, and then smaller reviews, we've grouped boards by chipset, with descriptions of the advantages and disadvantages of each. From within these groupings, we've chosen the best AMD and the best Intel boards overall.

To find out exactly what features each board has, take a close look at the Feature table on page 64 – you won't find a more detailed side-by-side comparison. so if you're looking to perform an upgrade, or build your own PC, this Labs holds all the answers. Plus, with prices ranging from $119 to $1,088, we've got every budget covered.


**TECHNICAL EDITOR:**
**Darren Ellis**
**CONTRIBUTORS:**
**Dan Chiappini,**
**Nirmal Chandrasena,**
**Alyn Sparkes,**
**Jim Martin,**
**Tim Danton**

# Construction Zone

ILLUSTRATION PHILLIP JORGE

| | | LABS WINNER | | | | | | | RECOMMENDED |
|---|---|---|---|---|---|---|---|---|---|
| MANUFACTURER AND MODEL NAME | ABIT KD7-SL | Gigabyte 7VAXPA Ultra | MSI KT4A Ultra-FISR | Shuttle AK39N | Soltek SL-KT400A-L | ABIT NF7-M | ASUS A7N8X Deluxe | Gigabyte 7NNXP | Leadtek WinFast K7NCR18G |
| Price (inc. GST) | $185 | $329 | $245 | $150 | $154 | $274 | $289 | $403 | $289 |
| Supplier | Altech | Gigabyte | MSI | SATO | Altech | AusPC Market | Acheiva | Gigabyte | BCN Technology |
| Phone | (02) 9735 5655 | 1300 880 038 | (02) 9748 0070 | (03) 9899 6333 | (02) 9735 5655 | (02) 9746 0900 | (02) 9742 3288 | 1300 880 038 | (02) 9648 0888 |
| Internet | www.altech.com.au | www.synnex.com.au | www.msicomputer.com.au | www.satotech.com.au | www.altech.com.au | www.auspcmarket.com.au | www.achieva.com.au | www.synnex.com.au | www.bcntech.com.au |
| Warranty | 2 years | 3 years | 2 years | 1 year | 2 years | 2 years | 3 years | 3 years | 2 years |
| **BASIC SPECIFICATIONS** | | | | | | | | | |
| Chipset | VIA KT400 | VIA KT400A | VIA KT400A | VIA KT400 | VIA KT400A | NVIDIA nForce2 | NVIDIA nForce2 | NVIDIA nForce2 | NVIDIA nForce2 |
| CPU socket | Socket A | Socket A | Socket A | Socket A | Socket A | Socket A | Socket A | Socket A | Socket A |
| CPU support | Athlon; Duron | Athlon; Duron | Pentium 4; Celeron | Athlon; Duron | Athlon; Duron | Athlon; Duron | Athlon; Duron | Athlon; Duron | Athlon; Duron |
| System FSB (MHz) | 333 | 333 | 800/533/400 | 200/100 | 333/266/200 | 333/266/200 | 400 | 333/266/200 | 400/333/266/200 |
| Memory supported | DDR400 | Dual DDR400 | DDR400 | DDR400 | DDR400 | Dual DDR400 | Dual DDR400 | Dual DDR400 | Dual DDR400 |
| DIMM slots (184-pin DDR) | 4 | 3 | 4 | 3 | 3 | 3 | 3 | 4 | 3 |
| Maximum RAM | 3.5GB | 3GB | 4GB | 3GB | 3GB | 3GB | 3GB | 3GB | 3GB |
| Dimensions W x H (mm) | 305 x 230 | 305 x 243 | 304 x 243 | 305 x 190 | 305 x 225 | 305 x 230 | 305 x 245 | 305 x 244 | 305 x 245 |
| **SLOTS AND CONNECTIONS** | | | | | | | | | |
| AGP slot | 8x | 8x | 8x | 8x | 8x | 8x | 8x | 8x | 8x |
| PCI slots | 6 | 5 | 5 | 5 | 6 | 5 | 5 | 5 | 5 |
| Highest UltraDMA mode | 133 | 133 | 100 | 133 | 133 | 133 | 133 | 100 | 133 |
| IDE | 2 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| SATA | 2 | 2 | 2 | N | N | N | 2 | 2 | 2 |
| SCSI | N | N | N | N | N | N | N | N | N |
| IDE RAID | N | Y | N | N | N | N | N | Y | N |
| SATA RAID | Y | Y | Y | N | N | N | Y | N | Y |
| SCSI RAID | N | N | N | N | N | N | N | N | N |
| **INTEGRATED PERIPHERALS AND PORTS** | | | | | | | | | |
| Audio | Realtek ALC650; 6-ch | Realtek ALC650, 6-ch | Realtek ALC650; 6-ch | VIA 3058 | VIA VT1616; 6-ch | NVIDIA MCP2; 6-ch | Realtek ALC650; 6-ch | NVIDIA MCP-T; 6-ch | NVIDIA MCP-T; 6-ch |
| Video | N | N | N | N | N | Integrated GeForce4 MX | N | N | Integrated GeForce4 MX |
| USB 2.0 | 2; +2 riser | 2; +4 riser | 4 | 2; +4 opt. | 2; +4 opt. | 2; +2 riser | 4; +2 riser | 4; +2 riser | 4 |
| FireWire | N | 3 riser | N | N | N | N | 2 riser | 2 riser | 2 |
| PS/2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Modem | N | N | N | N | N | N | 56K | N | N |
| Network | 10/100 | 10/100 | 10/100 | 10/100 | 10/100 | 10/100 | 2x 10/100 | 2x Gigabit | 10/100 |

| MANUFACTURER AND MODEL NAME | MSI K7N2 Delta-FISR | Shuttle MN31N | Soltek SL-75FRN2-L | Soltek SL-75MRN-L | ASUS P4PE | ECS Elitegroup L4IPEA2 | Shuttle AB4DM | Soltek SL-85DR3-R | ABIT BH7 |
|---|---|---|---|---|---|---|---|---|---|
| Price (inc. GST) | $239 | $198 | $168 | $206 | $289 | $157 | $139 | $198 | $180 |
| Supplier | MSI | SATO | Altech | Altech | Acheiva | Protac | SATO | Altech | Altech |
| Phone | (02) 9748 0070 | (03) 9899 6333 | (02) 9735 5655 | (02) 9735 5655 | (02) 9742 3288 | (02) 8748 8888 | (03) 9899 6333 | (02) 9735 5655 | (02) 9735 5655 |
| Internet | www.msicomputer.com.au | www.satotech.com.au | www.altech.com.au | www.altech.com.au | www.achieva.com.au | www.protac.com.au | www.satotech.com.au | www.altech.com.au | www.altech.com.au |
| Warranty | 2 years | 1 year | 2 years | 2 years | 3 years | 2 years | 1 year | 2 years | 2 years |
| **BASIC SPECIFICATIONS** | | | | | | | | | |
| Chipset | NVIDIA nForce2 | NVIDIA nForce2 | NVIDIA nForce2 | NVIDIA nForce2 | Intel 845PE | Intel 845PE | Intel 845PE | Intel 845PE | Intel 845PE |
| CPU socket | Socket A | Socket A | Socket A | Socket A | Socket 478 | Socket 478 | Socket 478 | Socket 478 | Socket 478 |
| CPU support | Athlon; Duron | Athlon; Duron | Athlon; Duron | Athlon; Duron | Pentium 4 | Pentium 4 | Pentium 4; Celeron | Pentium 4 | Pentium 4 |
| System FSB (MHz) | 333/266/200 | 333/266/200 | 333/266/200 | 333/266/200 | 533/400 | 533/400 | 800/533/400 | 533/400 | 533/400 |
| Memory supported | Dual DDR400 | Dual DDR400 | Dual DDR400 | Dual DDR400 | DDR333 | DDR333 | DDR400 | DDR333 | DDR333 |
| DIMM slots (184-pin DDR) | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 |
| Maximum RAM | 3GB | 3GB | 3GB | 3GB | 2GB | 2GB | 2GB | 2GB | 2GB |
| Dimensions W x H (mm) | 305 x 230 | 244 x 244 | 305 x 245 | 305 x 245 | 305 x 229 | 305 x 190 | 305 x 190 | 305 x 230 | 305 x 230 |
| **SLOTS AND CONNECTIONS** | | | | | | | | | |
| AGP slot | 8x | 8x | 8x | 8x | 4x | 4x | 4x | 4x | 4x |
| PCI slots | 6 | 3 | 5 | 5 | 6 | 5 | 5 | 6 | 5 |
| Highest UltraDMA mode | 133 | 100 | 133 | 133 | 100 | 100 | 100 | 100 | 100 |
| IDE | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 |
| SATA | 2 | N | N | N | 2 | N | N | 2 | 1 |
| SCSI | N | N | N | N | N | N | N | N | N |
| IDE RAID | Y | N | N | N | Y | N | N | Y | N |
| SATA RAID | Y | N | N | N | Y | N | N | Y | N |
| SCSI RAID | N | N | N | N | N | N | N | N | N |
| **INTEGRATED PERIPHERALS AND PORTS** | | | | | | | | | |
| Audio | C-Media 8738MX; 6-ch | Realtek ALC650; 6-ch | nForce2 MCP; 6-ch | nForce2 MCP; 6-ch | ADI AD1980; 6-ch | C-Media CMI9738; 4-ch | Realtek ALC650; 6-ch | Intel ICH4; 6-ch | Realtek ALC650; 6-ch |
| Video | N | GeForce4 MX | N | GeForce4 MX | N | N | N | N | N |
| USB 2.0 | 4 | 2; +4 opt. | 2 | 2; +4 opt. | 4; +2 riser | 4 | 2 | 2; +4 opt. | 4 |
| FireWire | 3 riser | N | N | N | 2 | N | N | N | N |
| PS/2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Modem | N | N | N | N | N | 56K | N | N | N |
| Network | Gigabit | 10/100 | 10/100 | 10/100 | 10/100 | 10/100 | 10/100 | N | 10/100 |

| MANUFACTURER AND MODEL NAME | Albatron Intel 865PE Pro II | AOpen AX45G Max (RECOMMENDED) | Gigabyte 8PENXP (LABS WINNER) | EPoX 4PDA2+ | QDI P4I865GMA-6AFL | QDI P 4I865PEA-6AFL | Shuttle AB60RS | Soltek 86MP-L | Soltek SL-865PE-L | ABIT IC7 |
|---|---|---|---|---|---|---|---|---|---|---|
| Price (inc. GST) | $315 | $390 | $582 | $310 | $219 | $229 | $119 | $242 | $230 | $308 |
| Supplier | AMI | BluechipIT | Gigabyte | Westan | BCN Technology | BCN Technology | SATO | Altech | Altech | Altech |
| Phone | (02) 9763 2122 | (02) 8745 8400 | 1300 880 038 | (03) 9543 7733 | (02) 9648 0888 | (02) 9648 0888 | (03) 9899 6333 | (02) 9735 5655 | (02) 9735 5655 | (02) 9735 5655 |
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| Warranty | 3 years | 3 years | 3 years | 2 years | 3 years | 3 years | 1 year | 2 years | 2 years | 2 years |
| **BASIC SPECIFICATIONS** | | | | | | | | | | |
| Chipset | Intel 865PE | Intel 865G | Intel 865PE | Intel 865PE | Intel 865 | Intel 865 | Intel 865PE | Intel 865PE | Intel 865PE | Intel 875P |
| CPU socket | Socket 478 | Socket 478 | Socket 478 | Socket 478 | Socket 478 | Socket 478 | Socket 478 | Socket 478 | Socket 478 | Socket 478 |
| CPU support | Pentium 4 | Pentium 4 | Pentium 4 | Pentium 4 | Pentium 4, Celeron | Pentium4, Celeron | Pentium 4, Celeron | Pentium 4, Celeron | Pentium 4 | Pentium 4 |
| System FSB (MHz) | 800/533/400 | 800/533/400 | 800/533/400 | 800/533/400 | 800/533/400 | 800/533/400 | 800/533/400 | 800/533/400 | 800/533/400 | 800/533 |
| Memory supported | Dual DDR400 | Dual DDR400 | Dual DDR400 | Dual DDR400 | Dual DDR400 | Dual DDR400 | Dual DDR400 | Dual DDR400 | Dual DDR400 | Dual DDR400 |
| DIMM slots (184-pin DDR) | 4 | 4 | 6 | 4 | 2 | 4 | 2 | 4 | 4 | 4 |
| Maximum RAM | 4GB | 4GB | 4GB | 4GB | 2GB | 4GB | 2GB | 4GB | 4GB | 4GB |
| Dimensions W x H (mm) | 305 x 244 | 305 x 244 | 305 x 244 | 305 x 245 | 96 x 91 | 304 x 243 | 305 x 245 | 305 x 244 | 305 x 244 | 305 x 230 |
| **SLOTS AND CONNECTIONS** | | | | | | | | | | |
| AGP slot | 8x | 8x | 8x | 8x | 8x | 8x | 8x | 8x | 8x | 8x |
| PCI slots | 5 | 6 | 5 | 5 | 3 | 5 | 5 | 6 | 6 | 5 |
| Highest UltraDMA mode | 100 | 100 | 133 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| IDE | 4 | 2 | 2 | 4 | 2 | 2 | 2 | 2 | 2 | 2 |
| SATA | 2 | 4 | 4 | 4 | 2 | 2 | 2 | 2 | 2 | 2 |
| SCSI | N | N | N | N | N | N | N | N | N | N |
| IDE RAID | Y | N | Y | Y | N | N | N | N | N | N |
| SATA RAID | Y | Y | Y | Y | N | Y | N | N | N | Y |
| SCSI RAID | N | N | N | N | N | N | N | N | N | N |
| **INTEGRATED PERIPHERALS AND PORTS** | | | | | | | | | | |
| Audio | VIA VT1720, 8ch | Realtek ALC650, 6ch | Realtek ALC650, 6ch | CMI9739, 6ch | Intel ICH5, 6ch | Realtek ALC650, 6ch | Intel ICH5, 6ch | Intel ICH5, 6ch | Intel ICH5, 6ch | Realtek ALC650, 6ch |
| Video | N | Intel Extreme Graphics 2 | N | N | Intel Extreme Graphics | N | N | Intel Extreme Graphics | N | N |
| USB 2.0 | 2, +4 riser | 6, +2 riser | 4, +2 riser, +2 opt. | 4, +4 opt. | 4, +4 opt. | 4 | 4, +4 opt. | 2 + 6 opt. | 2, +6 opt. | 4 |
| FireWire | 2 riser | 2 riser | 2 riser, +1 opt. | 2 riser | 1, +1 opt. | 1 | N | N | | 1, +2 opt. |
| PS/2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Modem | N | N | N | N | N | N | N | N | N | N |
| Network | | Gigabit | Gigabit | Gigabit | Gigabit | 10/100 | 10/100 | 10/100 | Gigabit | 10/100 |

| MANUFACTURER AND MODEL NAME | ABIT IC7-G | AOpen AX4C Max | ASUS P4C800 Deluxe | EPoX 4PCA3+ | Gigabyte 8KNXP Ultra | ABIT SR7-8X | Gigabyte 8INXP1394 | MSI 655 Max-FISR | ASUS P4G8X Deluxe | TYAN Trinity S2662AN |
|---|---|---|---|---|---|---|---|---|---|---|
| Price (inc. GST) | $440 | $450 | $399 | $325 | $1,088 | $165 | $439 | $250 | $375 | $387 |
| Supplier | Altech | BluechipIT | Acheiva | Westan | Gigabyte | Altech | Gigabyte | MSI | Acheiva | Altech |
| Phone | (02) 9735 5655 | (02) 8745 8400 | (02) 9742 3288 | (03) 9543 7733 | 1300 880 038 | (02) 9735 5655 | 1300 880 038 | (02) 9748 0070 | (02) 9742 3288 | (02) 9735 5655 |
| Internet | www.altech.com.au | www.bluechipit.com.au | www.achieva.com.au | www.westan.com.au | www.synnex.com.au | www.altech.com.au | www.synnex.com.au | www.mscomputer.com.au | www.achieva.com.au | www.altech.com.au |
| Warranty | 2 years | 3 years | 3 years | 2 years | 3 years RTB | 2 years | 3 years | 2 years | 3 years | 2 years |
| **BASIC SPECIFICATIONS** | | | | | | | | | | |
| Chipset | Intel 875 | Intel 875P | Intel 875P | Intel 875P | Intel 875P | SIS 648 | SiS 655 | SiS 655 | Intel E7205 | Intel E7205 |
| CPU socket | Socket 478 | Socket 478 | Socket 478 | Socket 478 | Socket 478 | Socket 478 | Socket 478 | Socket 478 | Socket 478 | Socket 478 |
| CPU support | Pentium 4 | Pentium 4 | Pentium 4, Celeron | Pentium 4 | Pentium 4 | Pentium 4 | Pentium 4 | Pentium 4 | Pentium 4, Celeron | Pentium 4, Celeron |
| System FSB (MHz) | 800/533/400 | 800/533 | 800/533/400 | 800/533 | 800/533 | 533/400 | 533/400 | 533/400 | 533/400 | 533/400 |
| Memory supported | Dual DDR400 | Dual DDR400 | Dual DDR400 | Dual DDR400 | Dual DDR400 | DDR333 | Dual DDR400 | Dual DDR400 | DDR266 | DDR266 |
| DIMM slots (184-pin DDR) | 4 | 4 | 4 | 4 | 6 | 3 | 4 | 3 | 4 | 4 |
| Maximum RAM | 4GB | 4GB | 4GB | 4GB | 4GB | 3GB | 4GB | 3GB | 4GB | 4GB |
| Dimensions W x H (mm) | 305 x 230 | 305 x 244 | 305 x 245 | 305 x 245 | 305 x 244 | 305 x 230 | 305 x 244 | 305 x 230 | 305 x 245 | 305 x 190 |
| **SLOTS AND CONNECTIONS** | | | | | | | | | | |
| AGP slot | 8x | 8x | 8x | 8x | 8x | 8x | 8x | 8x | 8x | 8x |
| PCI slots | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Highest UltraDMA mode | 100 | 100 | 133 | 100 | 133 | 133 | 133 | 133 | 100 | 100 |
| IDE | 2 | 3 | 2 | 4 | 2 | 2 | 4 | 3 | 2 | 2 |
| SATA | 4 | 4 | 4 | 2 | 2 | N | 2 | 2 | 2 | N |
| SCSI | N | N | N | N | 2x Ultra320 SCSI | N | N | N | N | N |
| IDE RAID | N | N | N | Y | Y | N | Y | Y | N | N |
| SATA RAID | 2x | Y | Y | Y | Y | N | Y | Y | Y | N |
| SCSI RAID | N | N | N | N | Y | N | N | N | N | N |
| **INTEGRATED PERIPHERALS AND PORTS** | | | | | | | | | | |
| Audio | Realtek ALC650, 6ch | AC97, 6ch | ADI AD1985, 6ch | CMI9739, 6ch | Realtek ALC650, 6ch | Hollywood 3D, 2ch | Realtek ALC650E | Realtek ALC650, 6ch | Realtek ALC650, 6ch | Intel ICH4 AC97, 6ch |
| Video | N | N | N | N | N | N | N | N | N | N |
| USB 2.0 | 4, +2 riser, +2 opt. | 4, +2 riser | 4 | 4, +4 opt. | 4, +4 riser | 2, +2 riser | 2, +2 riser | 4, +2 opt. | 4, +2 riser | 2, +4 riser |
| FireWire | 1, +2 riser | 2 riser | 1 | N | N | N | 2 riser | 2 riser | 2 riser | N |
| PS/2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Modem | N | N | N | N | N | N | N | N | N | N |
| Network | Gigabit | Gigabit | Gigabit | Gigabit | Gigabit | 10/100 | Gigabit | Gigabit,BlueTooth | Gigabit | Gigabit |

# PERFORMANCE ANALYSIS

## The Labs team delves into the guts of this month's motherboards, and points out what you need to know to chose the right one for your needs.

The main component of a motherboard that determines the features it supports and its performance is the chipset. Boards with the same chipset may differ in terms of layout, BIOS features and accessories provided, but their performance is typically within a couple of percent of each other (which is virtually negligible in real world terms). For this reason we decided to group the boards by chipset in the reviews to make things easier to digest. As such, instead of presenting results for every motherboard in this Labs, we've given the results by chipset.

We benchmarked boards with SYSmark2002 and 3DMark2001SE Pro to give an indication of day-to-day computing strengths, plus 3D crunching abilities. Although some motherboards came with onboard graphics, we chose to benchmark with GeForce FX 5200 graphics cards with NVIDIA Detonator FX drivers (rev. 44.03).

Each machine had a fresh install of Windows XP Professional (with XP SP1 installed), the BIOS flashed to the latest revision, and the latest drivers installed. Each board was benchmarked with 256MB of Corsair DDR400 and when applicable this was dropped to 256MB of DDR333.

Intel boards were benchmarked with a 3.06GHz Pentium 4, and AMD boards with an Athlon XP 2700+ (2.166GHz). We did have a 3200+ (2.2GHz) in the test Labs, but at the time of testing support for the chip was sketchy, and it didn't run on many of the motherboards we tried, so we chose a processor that would be accepted across all the motherboards. We also tested with Hyper-Threading disabled in the Pentium 4 as some motherboards objected to this too. The lesson is to double check the manufacturer's Website as well as user forums for compatibility advice before you purchase. Most manufacturers will update the BIOS to support new products very soon after release.

### Performance

Interestingly, the SiS655 chipset proved to be a strong contender, with high scores in both SYSmark2002 and 3DMark2001SE Pro, which is due to its dual-channel memory controller, AGP 8x and 1GHz Northbridge-Southbridge link.

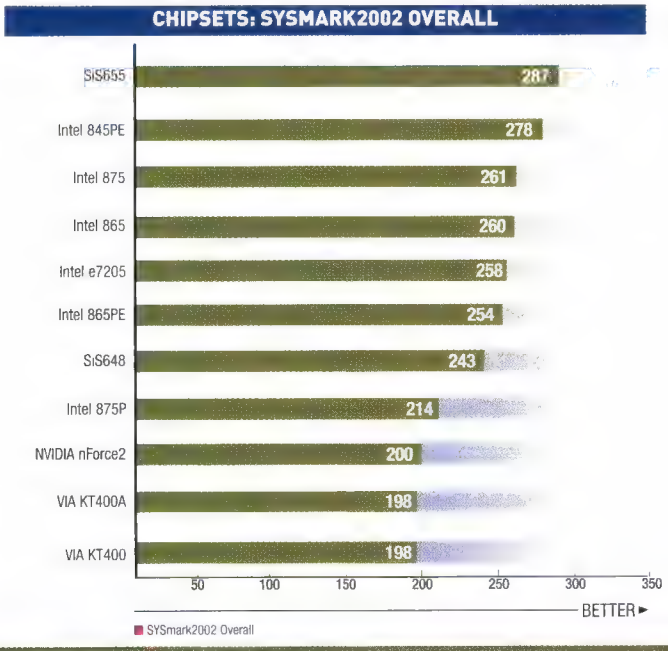
The other SiS chipset, the 648, has been around for a while and is the oldest on review here, but it receives a performance boost from its enhanced memory controller that saw it take on the Intel and VIA chipsets.

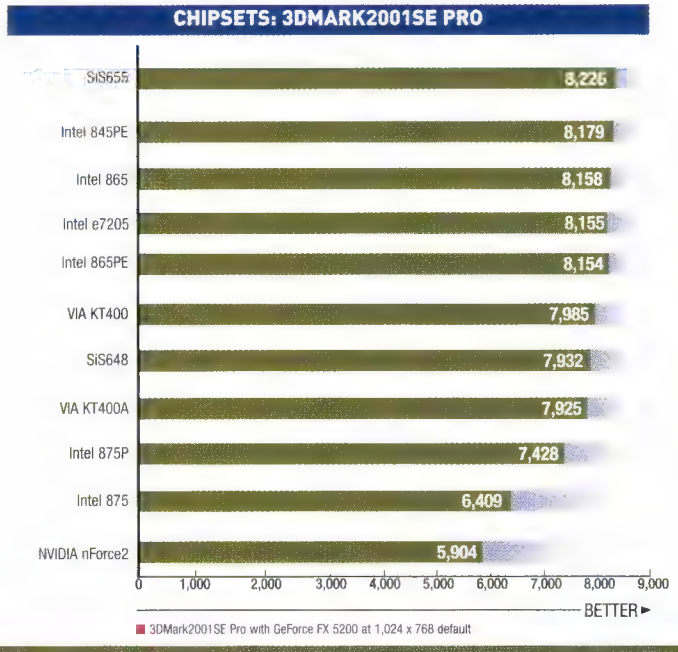
An extremely interesting turn-out was the low-ish results for the Intel 875 and 875P chipsets. Although this chipset supports dual-channel memory architecture, and an 800MHz FSB, it was slow in 3DMark2001 SE Pro (with the 875P far outshining the 875 but behind the majority). In day-to-day tasks, 875 proved to be a decent powerhouse.

Intel's 'Granite Bay' e7205 chipset also has dual-channel memory controllers, but in this case it worked well returning high scores particularly in 3DMark2001 SE Pro.

The new Intel 865/865PE Springdale chipset turned out to be the one to watch. Although this chipset did not have the fastest or highest scores, it did return scores that were consistently high. It also allows for a lot of goodies, such as plenty of USB ports, SATA, 800MHz FSB and more. The inclusion of integrated graphics on some models is nice, but don't expect blazing results if you use this option.

The same goes for the NVIDIA nForce2 boards. Their onboard graphics performance is pedestrian, but even without this the chipset scored very low in all performance tests compared to the VIA KT400.



## Boards

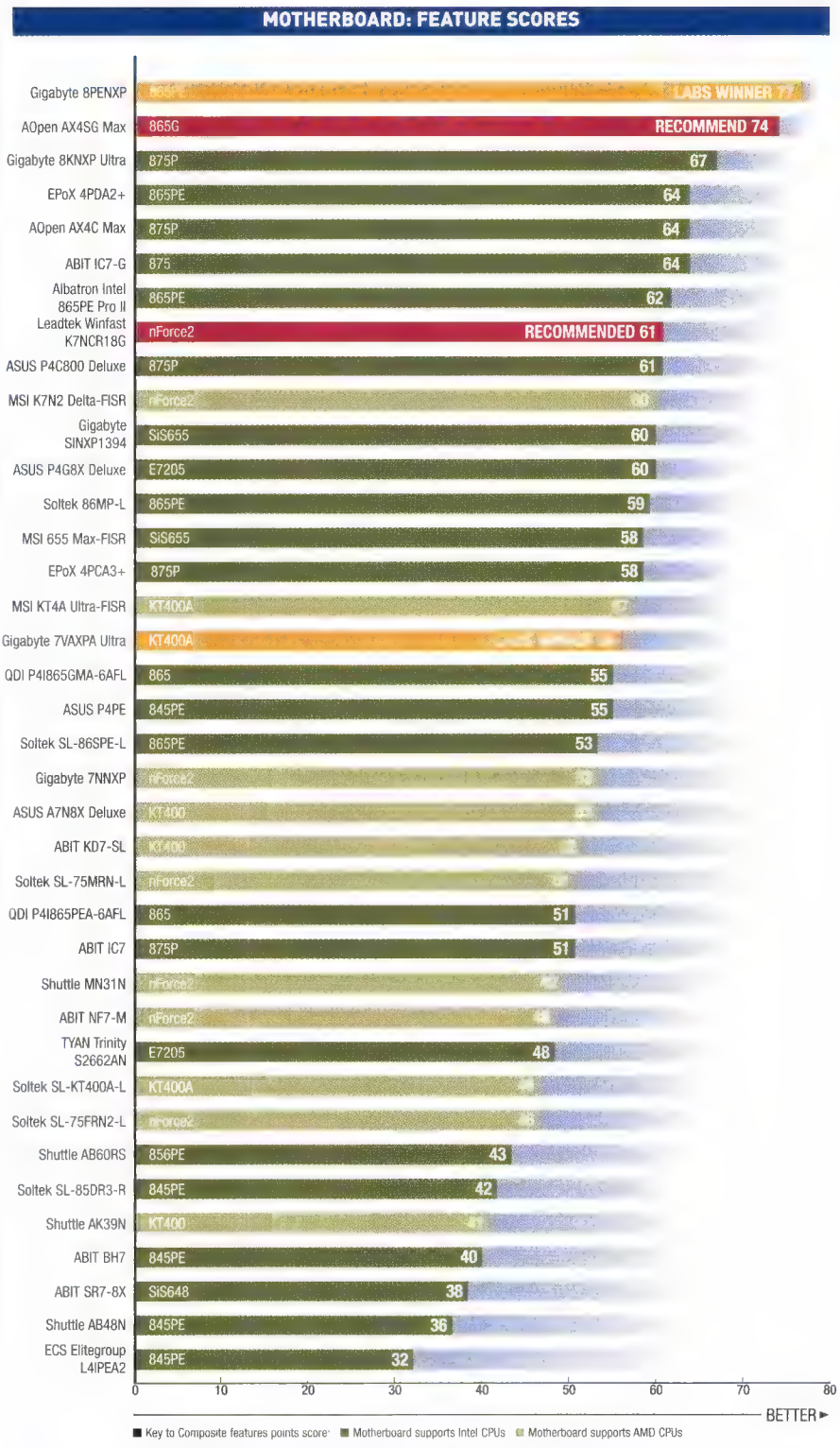
The chipset is only a building block for a motherboard, and although it determines what can and cannot be supported, it's up to the manufacturers to build their boards with the options they deem valuable.

The features score (right) for each motherboard is a conglomeration of points awarded for various features and functions. This included points for integrated audio, video and networking, upgradeability (such as PCI slots), RAM support and RAM slots available, frontside bus speeds, USB, FireWire, Ultra ATA speed, RAID, SATA ports included, AGP speed, and much more. All in all we awarded points for over 20 specifications. The chart to the right is a representation of the total feature points awarded to the motherboards.

In the reviews we've rated the motherboards on their quality (including warranty, layout, build quality etc), feature-set, value, which is derived from the quality and features scores with price factored in, and given an overall rating. As performance differences between boards with the same chipset is nominal (a few percent at most), we haven't included a Performance star rating (as all boards in the same chipset would have received the same score). Instead we have opted for a Quality star rating that reflects important factors such as the build quality and the layout of the board.

Regarding the terminology in this Labs, and all the different names out there for DDR-RAM, we've chosen to stick with the MHz rating for clarity's sake, and we're abandoning the bandwidth rating. This means 333MHz DDR RAM will be referred to as DDR333 instead of PC2700; and 400MHz DDR RAM as as DDR400, not PC3200. This also means we're not necessarily acknowledging the ratification issues surrounding memory standards. Always check with your motherboard manufacturer's site for RAM compliance before making a DDR RAM purchase.

Our thanks go to Achieva Technology (www.achieva.com.au) for lending us the testbench components.



# THE REVIEWS

We've sorted the reviews by chipset, with the AMD boards first, then the Intel, so you can easily find the motherboard to suit your needs.

## VIA KT400/KT400A

Athlon Duron

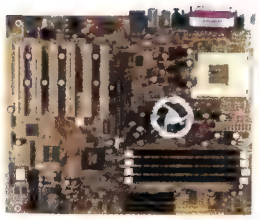
VIA has dominated in the AMD arena in the last couple of years, and its latest offering is the KT400 chipset. Despite the name, it officially supports up to just DDR333 memory, but many boards offer limited DDR400 support. AGP 8x is supported, as are 200, 266 and 333MHz FSBs. That's all thanks to the new VT8377 north bridge.

The V8235 south bridge is the same as used in VIA's P4X400 chipset for the Pentium 4. It has six-channel audio and USB 2 but no FireWire. All in all, the KT400 pales against the nForce2 for features though.

Introduction of a 533MB/sec V-Link interconnect to the Southbridge doubles the bandwidth compared to the KT333, resulting in nice quick transfers onto the Southbridge, and things like the hard disks and PCI cards.

VIA's KT400A Apollo chipset boasts DDR400 support, a 20% increase in memory bandwidth to the CPU compared to DDR333. The revised KT400 also introduced native SATA support for up to four devices, as well as up to four parallel ATA devices.

VIA's FastStream64 technology also uses an extended array of prefetch buffers to reduce latency in the memory controller, improving performance at lower transistor cost than dual channel offerings.



## ABIT

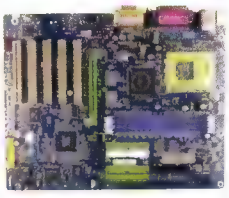
KD7-SL

**PRICE:** $185
**SUPPLIER:** Altech (02) 9735 5655
**INTERNET:** www.altech.com.au

Finishing around the middle of the features and benchmark department this month, the KD7-SL still has a lot going for it. DDR400 support and SATA RAID make it a very attractive board in the sub $200 price bracket. It offers generous spacing, eliminating the need of having to remove cards to get at RAM slots. With its very reasonable price tag it's an ideal candidate for consumers on a budget after plenty of bang for their buck.

QUALITY ..... 1 2 3 4 5 6
FEATURES ..... 1 2 3 4 5 6
VALUE ..... 1 2 3 4 5 6
OVERALL ..... 1 2 3 4 5 6

PC AUTHORITY LABS WINNER JULY 2003



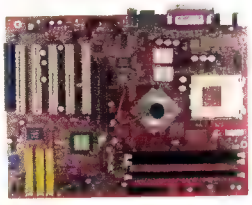
## GIGABYTE

7VAXP Ultra

**PRICE:** $329
**SUPPLIER:** Synnex 1300 880 038
**INTERNET:** www.synnex.com.au

Compared with some other VIA KT400A boards, the Gigabyte 7VAXP Ultra is a little pricey, although it's also the most feature-packed. It's the only KT400A board to include two IDE controllers with RAID, as well as on-board FireWire. It also offers six-channel audio and Gigabyte's Dual BIOS, which backs up your BIOS in the case of emergency. Build quality is excellent and it comes with a three year warranty.

QUALITY ..... 1 2 3 4 5 6
FEATURES ..... 1 2 3 4 5 6
VALUE ..... 1 2 3 4 5 6
OVERALL ..... 1 2 3 4 5 6



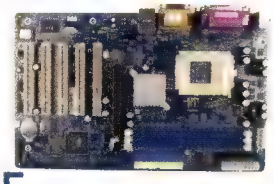
## MSI

KT4A Ultra-FISR

**PRICE:** $245
**SUPPLIER:** MSI (02) 9748 0070
**INTERNET:** www.msicomputer.com.au

The VIA KT400A chipset forms the foundation of the KT4A Ultra-FISR motherboard. Unlike the two other MSI boards in this roundup, the KT4A only supports SATA, and not IDE, RAID. While it outscores the Soltek SL-KT400A-L (another KT400A board), it comes with no FireWire ports. Though nothing else stands out about the KT4A Ultra, it scores well and is a well rounded board.

QUALITY ..... 1 2 3 4 5 6
FEATURES ..... 1 2 3 4 5 6
VALUE ..... 1 2 3 4 5 6
OVERALL ..... 1 2 3 4 5 6



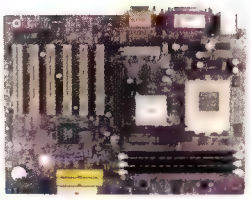
## SHUTTLE

AK39N

**PRICE:** $150
**SUPPLIER:** SATO (03) 9899 6333
**INTERNET:** www.satotech.com.au

A barebones Athlon mobo, the AK39N has enough functionality to set this board apart as an ideal platform for building a home PC or workstation. It comes with 10/100 Ethernet, five PCI slots, ATA/133 support and six-channel audio, but little else.
Its three DIMM slots are passable and can take 3GB of DDR400, and its relatively uncluttered layout means you'll be able to add the extras with ease.

QUALITY ..... 1 2 3 4 5 6
FEATURES ..... 1 2 3 4 5 6
VALUE ..... 1 2 3 4 5 6
OVERALL ..... 1 2 3 4 5 6



## SOLTEK
SL-KT400A-L

**PRICE:** $154
**SUPPLIER:** Altech (02) 9735 5655
**INTERNET:** www.altech.com.au

Another inexpensive Soltek board that's not too heavy on the feature-set, this KT400A board sports the bare minimum to scrape by, with six channel audio, dual USB 2.0 ports and ATA/133 support. On the plus side it has a whopping six PCI slots so you can upgrade or add essentials. We do wonder why the power connector is all the way over on the other side of the CPU though. At $154 it still makes a great budget board.

QUALITY ..... 1 2 3
FEATURES ..... 1 2 3
VALUE ..... 1 2 3 4 5 6
OVERALL ..... 1 2 3 4

## NVIDIA nFORCE2

Athlon Duron

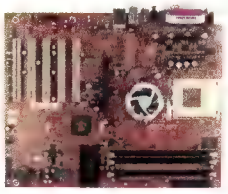
The nForce2 the only dual-channel memory controller available in the AMD pantheon.

There are two north bridges to choose from: one with integrated GeForce4 MX-class graphics (nForce2 GT) and one without (nForce2 ST). Both offer support for AGP 8x and up to DDR400 memory, although we recommend you use DDR266 or DDR333 memory in synchronous mode (DDR266 for chips with a 266MHz FSB, DDR333 for those with a 333MHz FSB) for best performance.

The nForce2's integrated graphics processor is designed to match GeForce4 MX performance. Where it may not be able compete against the likes of a card like a GeForce4 Ti 4200, it can handle current 3D games at lower resolutions.

Two south bridges are on offer for the nForce2: the MCP (Media and Communications Processor) and the MCP-T. The MCP-T is the upper-class model offering support for FireWire, dual Ethernet and SoundStorm hardware audio support. Audio is identical to the original nForce, providing proper Dolby Digital AC-3 sound. The MCP variant, available for value motherboards, will offer support for a single network channel and standard AC'97 audio.

The HyperTransport link between the north and south bridges also remains the same as for the nForce and allows them to exchange data at up to 800MB/sec.

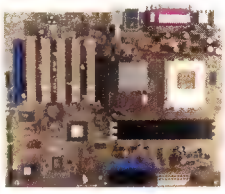


## ABIT
NF7-M

**PRICE:** $274
**SUPPLIER:** Aus PC Market (02) 9746 0900
**INTERNET:** www.auspcmarket.com.au

A board with middle-of-the-road features, the NF7-M boasts a well-designed and spacious layout with some nifty additions. The dual DDR memory controllers with three DIMM sockets allow for up to 3GB of DDR333 (or 2GB of DDR400). Integrated GeForce4 MX AGP graphics and six-channel AC'97 audio makes it ideal for a basic entertainment machine, although you'll want a separate 3D card for serious gaming.

QUALITY ..... 1 2 3 4
FEATURES ..... 1 2 3
VALUE ..... 1 2 3 4
OVERALL ..... 1 2 3



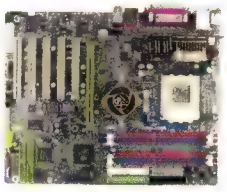
## ASUS
A7N8X Deluxe

**PRICE:** $289
**SUPPLIER:** Acheiva (02) 9742 3288
**INTERNET:** www.achieva.com.au

The A7N8X Deluxe features dual LAN ports, which allows you to connect to a broadband service and share it without the need for a separate PCI network card.

Asus' C.O.P (CPU Overheating Protection) stops chips from being damaged by shutting down prior to it reaching dangerous temperatures. Not the cheapest board this month, but a decent little performer for the cost.

QUALITY ..... 1 2 3 4
FEATURES ..... 1 2 3
VALUE ..... 1 2 3 4
OVERALL ..... 1 2 3 4



## GIGABYTE
7NNXP

**PRICE:** $403
**SUPPLIER:** Synnex 1300 880 038
**INTERNET:** www.synnex.com.au

For it's price, the 7NNXP has the usual set of features, and offers IDE RAID but no SATA RAID. It does have some good core features, such as support for 333MHz FSB, 4GB RAM and DDR400, but what really stands out is the dual gigabit LAN, offered with large-scale networking in mind. However, you pay for the privilege and if you're not planning to use it at home, then save your money and look elsewhere.

QUALITY ..... 1 2 3 4 5 6
FEATURES ..... 1 2 3
VALUE ..... 1 2 3
OVERALL ..... 1 2 3 4

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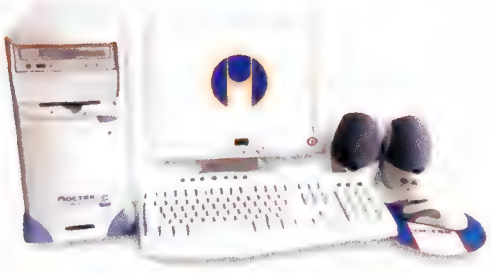

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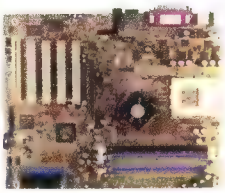
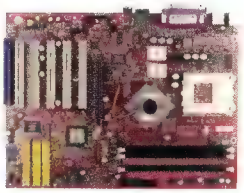


## LEADTEK
WinFast K7NCR18G-PROII

**PRICE:** $289
**SUPPLIER:** BCN (02) 9648 0888
**INTERNET:** www.bcntech.com.au

The WinFast K7NCR18G-PROII has a well rounded set of features, and besides the Abit NF7-M, it is the only Socket-A board in our round up to offer support for a front side bus speed of 400MHz. It's not the cheapest motherboard, but an integrated GeForce 4 MX graphics controller adds tremendous value, and is perfect for business use or fairly simple games, although newer games will require a dedicated AGP 3D card.

QUALITY ..... 1 2 3 4
FEATURES ..... 1 2 3 4
VALUE ..... 1 2 3 4 5
OVERALL ..... 1 2 3 4

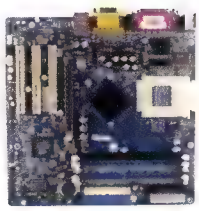


## MSI
K7N2 Delta-FISR

**PRICE:** $239
**SUPPLIER:** MSI (02) 9748 0070
**INTERNET:** www.msicomputer.com.au

The MSI K7N2 is a good nForce2 board overall, scoring well against other nForce2 contenders. It has a strong set of core features as well as some extra frills, like IDE and SATA RAID. All the IDE connectors are alongside the six PCI ports, and could make cabling adjustments a little tedious, and the power connector is over the CPU, but the quality of the board is excellent. At this price, it also represents decent value for money.

QUALITY ..... 1 2 3 4
FEATURES ..... 1 2 3 4
VALUE ..... 1 2 3 4
OVERALL ..... 1 2 3 4

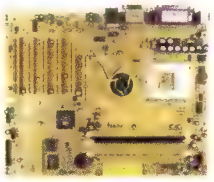


## SHUTTLE
MN31N

**PRICE:** $198
**SUPPLIER:** SATO Tech (03) 9899 6333
**INTERNET:** www.satotech.com.au

Although this board is fairly small on features, such as lacking SATA and FireWire, it does offer a space saving platform for building a first PC or for upgrading your current system and would make a decent but no frills workhorse.
The on-board graphics will save even more space, as you won't need an additional AGP card. The six-channel sound also makes it a top DVD platform.

QUALITY ..... 1 2
FEATURES ..... 1 2 3
VALUE ..... 1 2 3 4
OVERALL ..... 1 2 3

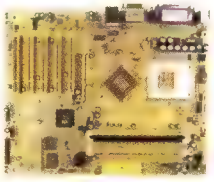


## SOLTEK
SL-75FRN2

**PRICE:** $168
**SUPPLIER:** Altech (02) 9735 5655
**INTERNET:** www.altech.com.au

Well and truly gone are the days of boring green and brown PCBs – and welcome to the yellow motherboard, care of Soltek. The SL-75FRN2 supports ATA/133, but has only two IDE connectors with no SATA or RAID support. It also has no FireWire ports, offering a modest two USB 2.0 ports. The price is very low, but this board is comparatively bare in features. It does ship with an impressive software bundle though.

QUALITY ..... 1 2 3 4
FEATURES ..... 1 2 3
VALUE ..... 1 2 3 4 5
OVERALL ..... 1 2 3



## SOLTEK
SL-75MRN-L

**PRICE:** $206
**SUPPLIER:** Altech (02) 9735 5655
**INTERNET:** www.altech.com.au

This is one of the few nForce boards here to take advantage of both the GeForce4 MX graphics chip, as well as supplying an AGP 8x slot. It has a well-spaced layout, but by all accounts is an average nForce board in comparison to the others. It comes with the requisite three DDR slots, five PCI slots and nForce2 MCP audio controller, with its one and only standout being its $206 price-tag, which is a good price for what you get.

QUALITY ..... 1 2 3
FEATURES ..... 1 2 3
VALUE ..... 1 2 3 4 5
OVERALL ..... 1 2 3

## BYE BIOS!

The motherboard BIOS is about to get a serious makeover. Software developer Phoenix Technologies is about to deliver a new design that promises vastly improved functionality, while Intel is promoting what appears to be a similar technology.

Both believe the BIOS as we know it has had its day, which is good news for users, who are likely to gain new tools to aid system security and recovery.

Phoenix's Core Management Environment (cME) is a protected space that's independent of the OS and could provide users with access to a host of applications, such as Phoenix's own Web browser, antivirus software or a system recovery application. Applications sitting in the environment are called FirstWare.

The company, which claims to provide BIOS software for 75 to 80 percent of PCs worldwide, said cME would provide a user-friendly interface.
*continued on p83...*

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# SyncMaster 172w

| Class | | SyncMaster 172w |
|---|---|---|
| Panel | Type | a-si TFT/TN |
| | Viewable area | 17" |
| | Pixel Pitch | 0.289 |
| | Brightness (Typ.) | 450cd/m² |
| | Contrast Ratio | 400 : 1 |
| | Viewing Angle (H/V) | 140° / 110° |
| | Response Time | 25ms |
| | Interface | Analog / Digital |
| Frequency | Horizontal Frequench | 30-81kHz |
| | Vertical Frequench | 56-75Hz |
| | Bandwidth | 140MHz |
| Maximum Resolution | | 1280x768 |
| Color Supported | | 16.2Mil. |
| Signal Input | Input Video Signal | Analog RGB, DVI Digital link |
| | Video Level | Analog : 0.7V p-p, Digital : TMDSTM |
| | Sync. Type | Separate H/V, Composite H/V, SOG (Option) |
| | Input Connectors | 15pin D-sub, DVI-D |
| | Included Signal Cables | VGA Cable, DVI Cable (Option) |
| Plug & Play | USB Powered Hub Option | N/A |
| | DDC | DDC 2B |
| Power | On Mode | 42 Watts (Max.) |
| | DPMS Mode | <2 Watts |
| Multimedia Speakers | | Stand Option |
| OSD-Digital Display Director™ | | Yes |
| Wall-Mount | | VESA 75mm |
| Available Colors | | Pearl Black, Pearl White, Gunmetal |
| Mac Compatibility | | Yes |
| Dimensions | Set with stand (WxHxD) | 431mmx371mmx216mm |
| | Packing (WxHxD) | 532mmx378mmx145mm |
| Weight | Net | 4.8kg |
| | Gross | 6.8kg |
| Regulations | | Energy Star, Energy 2000 Compliant, NUTEK, Medical Certification, TCO99 (Silver, Gunmetal), TCO95 (Black, White) |
| Warranty (P / L / Backlight) | | 3y / 3y / 20,000hrs |
| Stand | | Dual-hinge Stand, M/M Stand (Option) |

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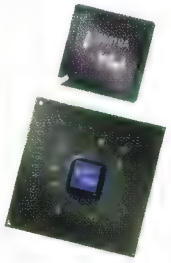
## INTEL 845PE

Pentium 4 Celeron

The 845PE was supposed to be Intel's mainstream desktop DDR chipset, although the E7205 (the Granite Bay), and now the 865 and 875, have stolen much of its thunder with dual-channel DDR. However, it remains an appealing platform thanks to Hyper-Threading support, official DDR333 support and the ICH4 south bridge, which includes the USB 2.0 controller. While there's also an enhanced AC'97 controller, most manufacturers choose to use separate six-channel audio.



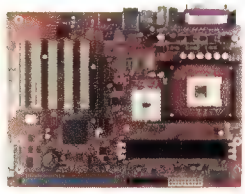
One of the main limitations of the 845PE is its support for AGP 4x only. The other limitation is that the chipset supports a maximum of 2GB of memory, and only two double-sided DDR DIMMs can be used because banks two and three are shared between two sockets.

Essentially, the 845GE is identical to the 845PE but with integrated Intel Extreme Graphics.

Addition of a CNR slot allows for cheaper implementation of peripherals such as: LAN; DSL; USB; wireless technology; audio and modems, although there aren't a great deal of available CNR peripherals floating around, so it's value is pretty nominal.

In performance terms, the lack of dual-channel DDR lets the 845 down, and only it's generally lower price would make us recommend it over the 865 or 875.

## ABIT



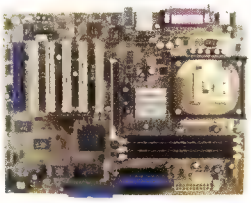
### BH7

**PRICE:** $180
**SUPPLIER:** Altech (02) 9735 5655
**INTERNET:** www.altech.com.au

The BH7 sports plenty of connectivity options, with two S/PDIF ports for optical audio; six-channel audio, SATA and side-mounted IDE ports. Hardware monitoring allows for fan speed, voltage, CPU and system temperature supervision, ideal given the board's overclockability through ABIT's SoftMenu BIOS. The only real limitation is its lack of AGP 8x support, although at its tidy price, this is a ripper of a board.

**QUALITY** ..... 1 2 3 4 ○ ○
**FEATURES** ..... 1 2 3 ○ ○ ○
**VALUE** ..... 1 2 3 4 5 6 ○
**OVERALL** ..... 1 2 3 4 ○ ○

## ASUS



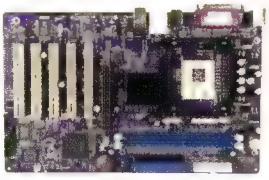
### P4PE

**PRICE:** $289
**SUPPLIER:** Acheiva (02) 9742 3288
**INTERNET:** www.achieva.com.au

The board's ability to increase CPU core voltage in 0.025V increments as well as adjustable FSB/DDR ratio with fixed AGP/PCI frequencies allows for maximum performance with absolute control. Thermally regulated cooling is used to keep the machine cool and quiet, while the bundled antivirus software helps you keep an eye on your machine's security. Overall a solid board with decent features and price.

**QUALITY** ..... 1 2 3 4 ○ ○
**FEATURES** ..... 1 2 3 4 ○ ○
**VALUE** ..... 1 2 3 4 ○ ○
**OVERALL** ..... 1 2 3 4 ○ ○

## ECS



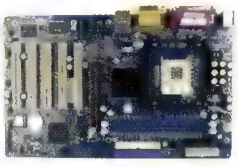
### Elitegroup L4IPEA2

**PRICE:** $157
**SUPPLIER:** Protac (02) 8748 8888
**INTERNET:** www.protac.com.au

At the very reasonable price of $157, ECS's L4IPEA2 is a great little board. The attractive purple PCB features hardened rounded corners to avoid damage, while the small form factor would make it ideal for a smaller system. Lacking AGP 8x, bearing only two DDR slots and no FireWire connectivity, it's not the most feature packed-board, but it's cheap and basic, and the layout is good. Perfect for an upgrade or budget machine.

**QUALITY** ..... 1 2 3 ○ ○ ○
**FEATURES** ..... 1 2 ○ ○ ○ ○
**VALUE** ..... 1 2 3 4 ○ ○
**OVERALL** ..... 1 2 ○ ○ ○ ○

## SHUTTLE

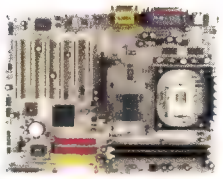


### AB48N

**PRICE:** $139
**SUPPLIER:** SATO (03) 9899 6333
**INTERNET:** www.satotech.com.au

Like the AK39N, the AB48N is a slightly smaller ATX board with two DIMMs, and does not come with SATA, although it does incorporate six-channel audio and 10/100 Ethernet. It supports Hyper-Threading, but connectivity options are low. Unless dimensions are an issue, the Shuttle ABRS60 865PE-based board is a better buy, which is even cheaper than this very inexpensive board, at an incredible $119.

**QUALITY** ..... 1 2 ○ ○ ○ ○
**FEATURES** ..... 1 2 ○ ○ ○ ○
**VALUE** ..... 1 2 3 4 ○ ○
**OVERALL** ..... 1 2 3 ○ ○ ○



## SOLTEK

SL-85DR3-R

**PRICE:** $198
**SUPPLIER:** Altech (02) 9735 5655
**INTERNET:** www.altech.com.au

One of the mid-priced Intel 845PE boards, the Soltek SL-85DR3 comes in just shy of $200. Offering only the two DDR slots, the board does manage to up the ante with a single IDE RAID channel, dual SATA ports with RAID, six PCI slots and audio, but loses out again with no form of networking included. Interestingly, the SL-85DR3-R is one of few boards to use Intel's own ICH4 audio instead of a third-party chip.

QUALITY ..... 1 2 3 4 5 6
FEATURES ..... 1 2 3 4 5 6
VALUE ..... 1 2 3 4 5 6
OVERALL ..... 1 2 3 4 5 6

## INTEL 865/865G

Pentium 4 | Celeron

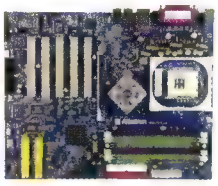
Intel's 865G chipset (codenamed Springdale), is almost identical to the 875 (Canterwood), and is designed to support the new Intel Pentium 4 Processor with Hyper-Threading as well as the 800MHz front side bus (FSB). It also includes 8x AGP, USB 2.0 and Serial ATA support.

Dual channel DDR gives a performance improvement over single channel DDR, which is especially important for the Pentium 4, as it sports a faster system bus than the Athlon XP, and thus demands more memory bandwidth to get the most from the CPU. The memory performance is most noticeable in multimedia and 3D-intensive applications, which depend a great deal on the memory.

The 865G platform has been specifically tailored for use as a stable platform for corporate and consumer users, while the 865P and PE boards are geared towards mainstream consumers and speed.

The Intel 865G chipset also has optional Gigabit Ethernet, surround sound connectivity, Intel's Extreme Graphics 2 and SATA RAID with the ICH5R Southbridge.

The cut-down 865P sports identical functions, although it operates at only 533MHz FSB and supports DDR333, not 800MHz and DDR400.



## ALBATRON

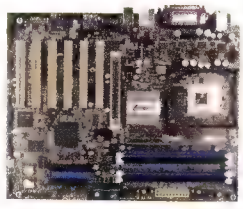
Intel 865PE Pro II

**PRICE:** $315
**SUPPLIER:** AMI (02) 9763 2122
**INTERNET:** www.ami-computers.com

Albatron's offering to the 865P family is bursting at the seams with features. SATA and IDE RAID, eight-channel audio, FireWire, dual channel DDR, USB 2.0 and Gigabit Ethernet is all brilliant, but at the surprisingly low price of $315, this is definitely worth consideration if you're after a board for your 800MHz Pentium 4. The 865 is also a top performer, so you know you'll get the most bang for your buck.

QUALITY ..... 1 2 3 4 5 6
FEATURES ..... 1 2 3 4 5 6
VALUE ..... 1 2 3 4 5 6
OVERALL ..... 1 2 3 4 5 6

PC AUTHORITY RECOMMENDED JULY 2003



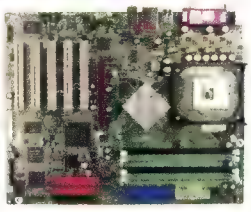
## AOPEN

AX4SG Max

**PRICE:** $390
**SUPPLIER:** BluechipIT (02) 8745 8400
**INTERNET:** www.bluechipit.com.au

Built with convenience in mind, this board features six board-mounted USB 2.0 ports, and two more on a rear panel. Its Die-Hard II BIOS is designed to prevent damage from viruses, while Intel integrated graphics, six-channel audio, SATA and plenty of USB ports round of the package nicely. Overall, a great board for the connectively-concerned and while it's costly, for a motherboard, you get plenty of integrated peripherals.

QUALITY ..... 1 2 3 4 5 6
FEATURES ..... 1 2 3 4 5 6
VALUE ..... 1 2 3 4 5 6
OVERALL ..... 1 2 3 4 5 6



## EPOX

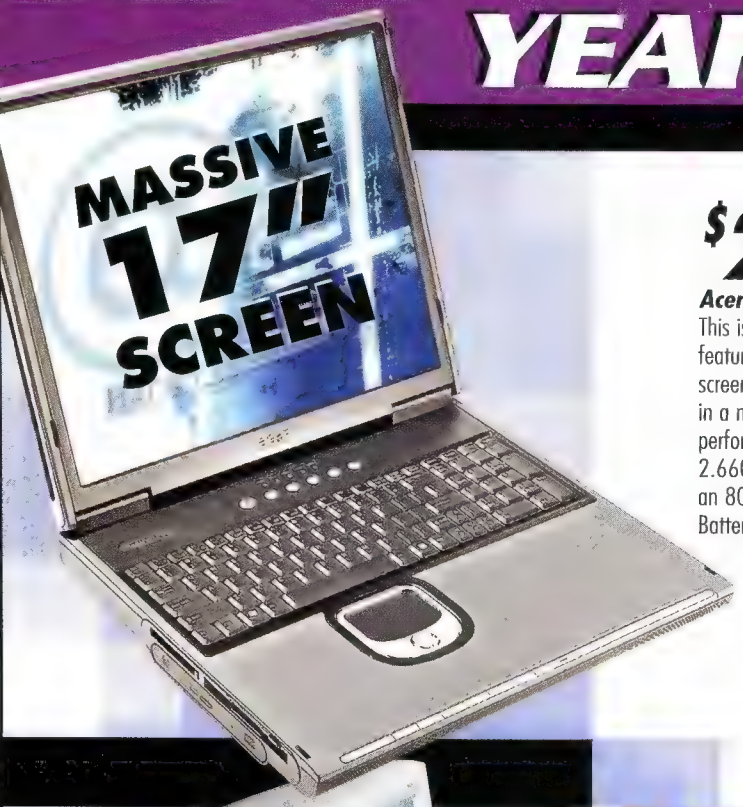
4PDA2+

**PRICE:** $310
**SUPPLIER:** Westan (03) 9543 7733
**INTERNET:** www.westan.com.au

Scoring strongly for features across all the boards, the EPoX 4PDA2+ is formidable with, four IDE and SATA ports, IDE and SATA RAID, and excellent I/O connectivity. The core specifications are also strong, with the 4PDA2+ supporting DDR400 and 4GB RAM. It can operate with an 800MHz FSB and the BIOS offers some nice tuning features for overclockers and system tweakers too.

QUALITY ..... 1 2 3 4 5 6
FEATURES ..... 1 2 3 4 5 6
VALUE ..... 1 2 3 4 5 6
OVERALL ..... 1 2 3 4 5 6

# END OF FINANCIAL YEAR SALE

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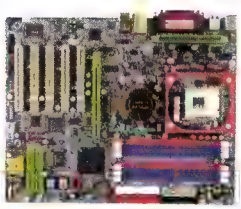
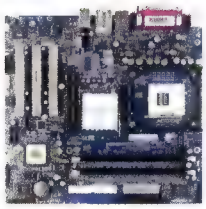


## GIGABYTE
8PENXP

**PRICE:** $582
**SUPPLIER:** Synnex 1300 880 038
**INTERNET:** www.synnex.com.au

You might be wondering why the Gigabyte 8PENXP might cost $582. The short answer is it's because of the features. It supports up to 4GB RAM with six DIMM slots, SATA and IDE RAID, Gigabit Ethernet, eight USB, three FireWire and four SATA ports. The 8PENXP also comes with a three year warranty. While this might seem expensive, it's still a lot cheaper than purchasing add on cards for all these features.

**QUALITY** ..... 1 2 3 4 5 6
**FEATURES** ..... 1 2 3 4 5 6
**VALUE** ..... 1 2 3
**OVERALL** ..... 1 2 3 4 5

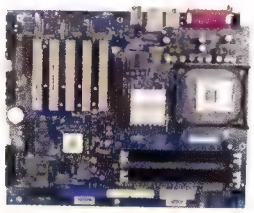


## QDI
P4I865GMA

**PRICE:** $219
**SUPPLIER:** BCN (02) 9648 0888
**INTERNET:** www.bcntech.com.au

Before you complain about how little expansion this board allows – note that it's Micro ATX. In fact, the P4I865GMA packs a punch. Offering DDR400 support, AGP 8x, SATA, Gigabit LAN, onboard audio, and top I/O options, this little board also offers onboard Intel graphics. The layout is reasonable, although the the graphics card may need to be removed in order for the RAM to be accessed.

**QUALITY** ..... 1 2 3 4
**FEATURES** ..... 1 2 3
**VALUE** ..... 1 2 3 4 5
**OVERALL** ..... 1 2 3

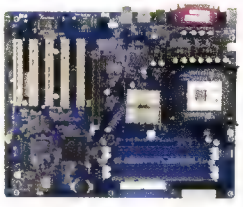


## QDI
P4I865PEA

**PRICE:** $229
**SUPPLIER:** BCN (02) 9648 0888
**INTERNET:** www.bcntech.com.au

QDI offers another board similar to the P4I865GMA Micro ATX board, except this one is full size ATX. As one would expect, has more expansion and memory slots than it's smaller cousin – however, it does not have onboard graphics, nor does it come with the same degree of I/O connectivity. The extra $10 grants some expansion, but takes away your onboard video. Still a pretty decent board though.

**QUALITY** ..... 1 2 3 4
**FEATURES** ..... 1 2 3
**VALUE** ..... 1 2 3 4 5
**OVERALL** ..... 1 2 3 4

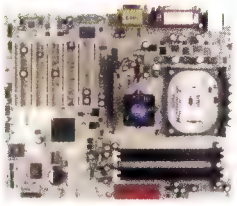


## SHUTTLE
AB60RS

**PRICE:** $119
**SUPPLIER:** SATO (03) 9899 6333
**INTERNET:** www.satotech.com.au

For an attractively low $119, the Shuttle AB60RS offers all the basics, and also includes SATA, AGP 8x, and support for up to eight USB ports. Though supported, it does not come with any FireWire ports (risers). It has only two DIMMs, though, and can support only 2GB RAM, limiting your upgrade options in the future. However, given the price, the AB60RS makes a great value board with all the essentials intact.

**QUALITY** ..... 1 2
**FEATURES** ..... 1 2 3
**VALUE** ..... 1 2 3 4 5
**OVERALL** ..... 1 2 3

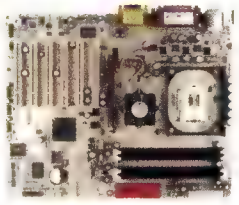


## SOLTEK
SL-86MP-L

**PRICE:** $242
**SUPPLIER:** Altech (02) 9735 5655
**INTERNET:** www.altech.com.au

Soltek offers a 865 board for a fair price with the SL086MP-L. It has some good core specifications – it hosts both Pentium 4 and Celeron processors, with support for 800MHz FSB and up to 4GB of DDR400. It has six PCI slots, IDE and SATA, but no RAID support. The SL-86MP-L also sports a feature that is rarely found in our roundup – onboard video, which is a great money saver if you don't want to run 3D games.

**QUALITY** ..... 1 2 3
**FEATURES** ..... 1 2 3 4
**VALUE** ..... 1 2 3 4 5
**OVERALL** ..... 1 2 3 4



## SOLTEK
SL-86SPE-L

**PRICE:** $230
**SUPPLIER:** Altech (02) 9735 5655
**INTERNET:** www.altech.com.au

Soltek's SL-865PE-L is very similar to its 865-based cousin to the left. The main difference is the lack of onboard graphics, which accounts for the difference in price. It has a decent feature set, although it's outdone by some of the other 865PE boards here. The SL-865PE-L has great potential for expansion, with six PCI slots, four DDR slots and dual SATA ports, although it lacks SATA RAID.

**QUALITY** ..... 1 2 3
**FEATURES** ..... 1 2 3
**VALUE** ..... 1 2 3 4
**OVERALL** ..... 1 2 3

LOOK NO FURTHER

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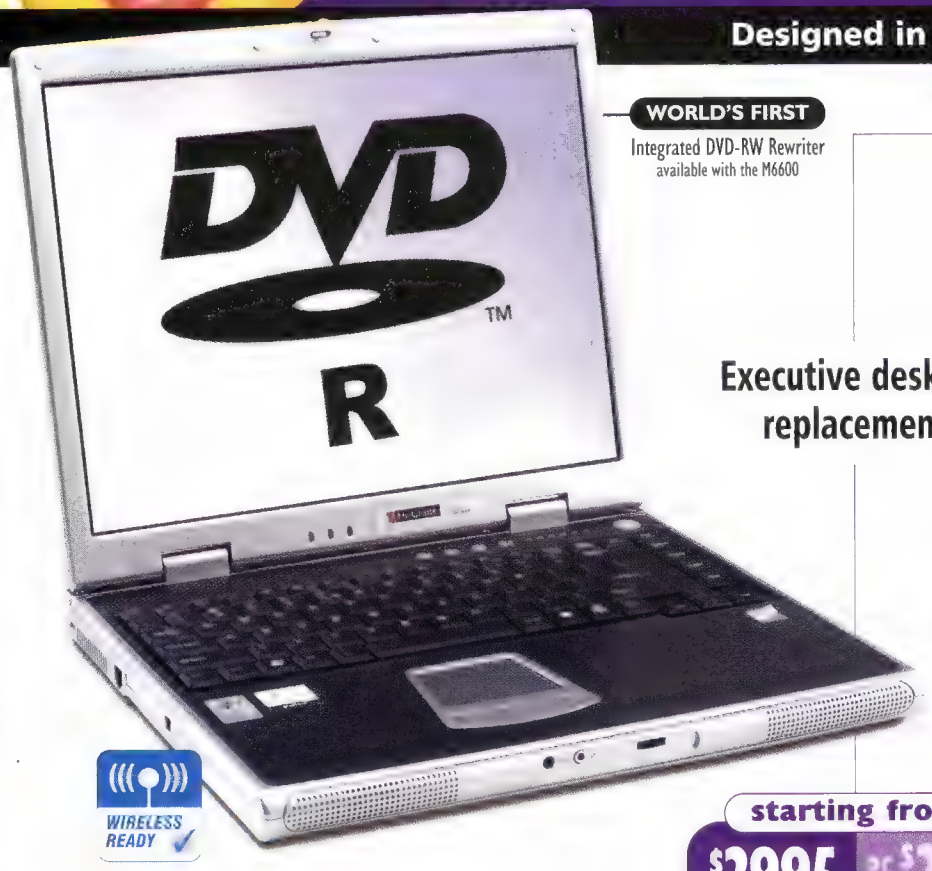


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*Features & Options*

- Mobile Intel® Pentium® 4 processor 2.0 - 2.6GHz - M
- supports Enhanced Intel® SpeedStep® Technology**
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- 20Gb (up to 60Gb) hard disk drive
- 15.1" TFT SXGA colour screen
- Nvidia GeForce4 440 Go with 64MB DDR VRAM
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- Li-ion battery 12 cell (~ 3hours,
- Type II PC-card slot
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- Dimensions: 332 x 285 x 30-34mm
- Weight: 3.4kg

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### NOTINO R5400
*Features & Options*

Mobile Intel® Pentium® 4 processor 2.0 - 2.6GHz - M • supports Enhanced Intel® SpeedStep® Technology** • VIA P4N266 chipset • 128Mb (up to 640Mb) DDR RAM • 20Gb (up to 60Gb) hard disk drive • 14.1" TFT XGA colour screen • Nvidia GeForce4 420 Go with 32MB DDR VRAM • DVD-ROM/CD-ReWriter combo drive • Li-ion battery 6 cells (~ 2.5 hours) • Type II PC-card slot • Ports: external VGA, 3 x USB 2.0 ports, parallel, serial, IEEE 1394, mic-in, TV out, IR, line-out • Built-in Wireless 802.11b LAN module option • Dimensions: 312 x 257 x 35mm • Weight: 2.6kg • Semi-ruggedised casing for extra durability • Spill-proof keyboard

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## NOTINO 4400
*Features & Options*

*Mobile Intel® Pentium® 4 Processor 1.8 2.5GHz – M • supports Enhanced Intel® Speedstep® Technology** • SiS650 chipset • 128Mb (up to 1024Mb) DDR RAM • 20Gb (up to 60Gb) removable hard disk drive • 14.1" TFT XGA colour screen • SiS Integrated 3D graphics, shares system RAM up to 64Mb • CD-ROM or DVD-ROM/CD-ReWriter combo drive, Built-in floppy disk drive • Li-ion battery 8 cell (~2.5 hours) • Type II PC-card slot • Ports: external VGA • 2 x USB 1.1, parallel, serial, IEEE1394, TV-out, IR, line-out, mic-in • Built-in Wireless 802.11b LAN module option • Dimensions: 325 x 269 x 40mm • Weight: 3.2kg*

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**Slimline high tech with 3:2 widescreen**

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## NOTINO W6700
*Features & Options*

*Mobile Intel® Pentium® 4 processor 1.8 - 2.5GHz - M • supports Enhanced Intel® SpeedStep® Technology**

*Intel® 845 chipset*

*256Mb (up to 1024Mb) DDR RAM*

*20Gb (up to 60Gb) hard disk drive*

*15.2" TFT WXGA+1280x854 15:10 wide colour screen*

*Nvidia GeForce4 440 Go with 64MB DDR VRAM*

*DVD/CD-ReWriter combo drive or CD/DVD-R Combo drive*

*Li-ion battery 9 cell (~2.30 hours)*

*Type II PC-card slot*

*Ports: external VGA, 2 x USB 2.0, parallel, serial, IEEE1394, TV-out, IR, line-out (with SPDIF), mic-in, line-in,*

*Built-in Wireless 802.11b LAN module option,*

*Dimensions: 352 x 260 x 29.9-31.4mm*

*Weight: 2.7kg*

intel inside pentium 4

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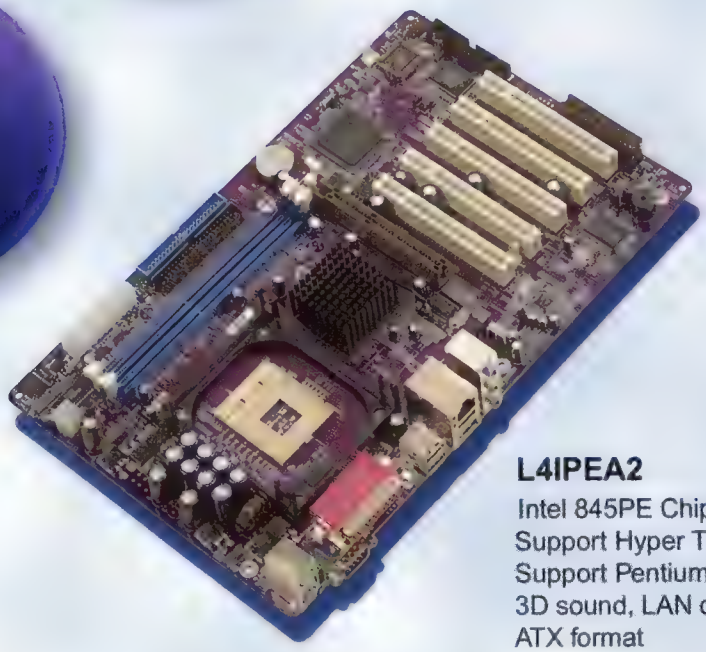
VIA P4X400 Chipsets
Support Hyper Threading
P4 533MHz FSB
8xAGP
AC 97 Codec, USB2.0
ATX format

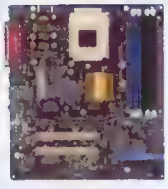


**L4IPEA2**
Intel 845PE Chipsets
Support Hyper Threading
Support Pentium 4 533MHz FSB
3D sound, LAN on board
ATX format

**L7S7A2**
SiS746 + 963
Socket A, 266/333MHz FSB
Supports DDR333
USB 2.0
8xAGP
6 Channel Audio

**L4S5A3**
SiS645DX+962L
P4 533MHz FSB
Hyper Threading
AC97 Codec, USB 2.0
ATX Format

**L4S5MG3/651**
SIS651 +962L
Hyper Threading
P4 533MHz FSB
64M VGA (share)
AC 97 Codec, USB2.0
MATX format



**K7VMM+**
VIA KM266A
SocketA for AMD CPU
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10/100Mbps LAN
mATX Format

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## INTEL 875/875P

Pentium 4 Celeron

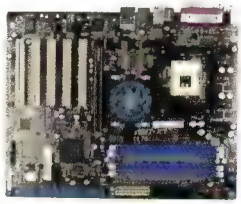
The Intel 875P chipset (codenamed Canterwood) is very similar to the 865 in features. In fact, the 875P is essentially just the best silicon from the same line as the 865, which enables Intel to include its new Performance Acceleration Technology (PAT). PAT basically represents streamlined and aggressive memory settings, meaning you need to use the best quality RAM when running an 875P. With dual channel DDR400 support, this has the potential to make the 875P the top Pentium 4 performance chipset.

The 875P supports AGP 8x, although at this stage there are no options for integrated graphics, which makes sense given the positioning of this chipset.

The 875P is also designed specifically to work with the new Pentium 4 with Hyper-threading straight out of the box.

It also features Intel's CSA (Communication Streaming Architecture), which is a dedicated bus for networking straight to the memory to improve Gigabit networking performance.

The chipset also supports USB 2.0 as well as Serial ATA with RAID. Addition of AC'97 audio provides native six-channel audio on board, better than some PCI cards available separately.

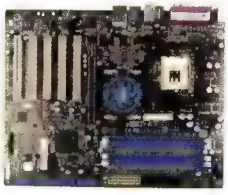


## ABIT
### IC7

**PRICE:** $308
**SUPPLIER:** Altech (02) 9735 5655
**INTERNET:** www.altech.com.au

The IC7 offers support for up to 4GB of dual channel DDR, delivering bandwidth of 4.8GB/sec. Decked out with every port known to humanity, it has integrated FireWire; USB 2.0; SATA; 10/100 Ethernet and six-channel audio. Solid build quality and a two-year warranty put this board up there with the best of them. With plenty of FSB and multiplier options, this board is definitely geared for the overclockers.

QUALITY ..... 1 2 3 4 5
FEATURES ..... 1 2 3 4 5
VALUE ..... 1 2 3 4 5
OVERALL ..... 1 2 3 4 5

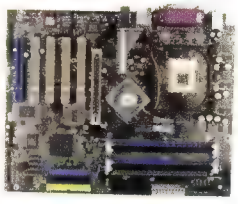


## ABIT
### IC7-G

**PRICE:** $450
**SUPPLIER:** Altech (02) 9735 5655
**INTERNET:** www.altech.com.au

Almost identical to the IC7, the IC7-G also features Gigabit LAN and four SATA connectors. Three fan headers on the board allow for the heat sink fan, case fan and an auxiliary fan, which is good for tweakers. Side mounted IDE ports stop cables draping over other peripherals, which improves cooling. You do pay a premium for the extra SATA and Gigabit Ethernet, though, so if you're not going to use it, then go for the IC7.

QUALITY ..... 1 2 3 4 5
FEATURES ..... 1 2 3 4 5
VALUE ..... 1 2 3 4 5
OVERALL ..... 1 2 3 4 5

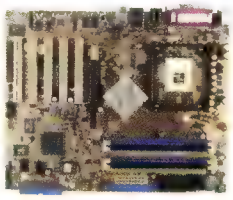


## AOPEN
### AX4C Max

**PRICE:** $450
**SUPPLIER:** BluechipIT (02) 8745 8400
**INTERNET:** www.bluechipit.com.au

With the AX4C Max comes a whopping four SATA ports, also supporting RAID. The board will also be popular with overclockers with its comprehensive BIOS tweaking features, such as 1MHz stepping for the CPU and AGP/PCI clocks, as well as adjustable voltage for the CPU, AGP/PCI and RAM. Packed with features, this board is sure to impress the storage and performance conscious.

QUALITY ..... 1 2 3 4 5
FEATURES ..... 1 2 3 4 5
VALUE ..... 1 2 3 4 5
OVERALL ..... 1 2 3 4 5



## ASUS
### P4C800 Deluxe

**PRICE:** $399
**SUPPLIER:** Acheiva (02) 9742 3288
**INTERNET:** www.achieva.com.au

One of the most interesting features of any board in this Labs is the 'AI' in the P4C800 Deluxe. The board will automatically inform you if you've plugged the wrong sort of peripheral into an audio jack, as well as informing of network cable problems. There are plenty of BIOS options for tweaking and overclocking too. If you're not after Gigabit LAN or want a few less SATA drives there's some stiff competition for the price though.

QUALITY ..... 1 2 3 4 5
FEATURES ..... 1 2 3 4 5
VALUE ..... 1 2 3 4 5
OVERALL ..... 1 2 3 4 5

NO one has been here!
GIGABYTE K7 Triton Series 6-Dual Motherboard

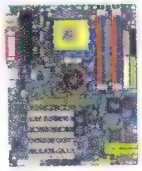


## K7 Triton™ series
### GA-7NNXP nForce2 Ultra 400 SPP/ MCP-T Chipset

- Supports AMD Athlon™ XP FSB 400MHz processor
- GIGABYTE unique Dual Power System (DPS) design
- Supports Dual Channel DDR400 memory architecture
- Integrated Serial-ATA interface with RAID 0,1 function
- Integrated GigaRAID IDE RAID Interface
- Dual LAN solution with Intel® PRO/1000 CT integrated
- Supports 6-channel Dolby Digital audio via S/P-DIF output
- Integrated IEEE 1394 FireWire interface

Dual LAN | Serial ATA | IEEE 1394 | ATA133 RAID | Intel® PRO | USB 2.0 | DualBIOS™ | 6-Channel Audio | EasyTune™ 4 | Q-Flash™ | @BIOS™

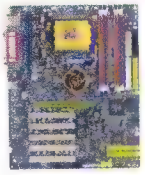
## K7 Triton™ series
### GA-7NNXPV nForce2 IGP/ MCP-T Chipset



- Supports AMD Athlon™ XP processor
- GIGABYTE unique Dual Power System (DPS) design
- Supports Dual Channel DDR333 memory architecture
- Graphics motherboard with Dual View support.
- Integrated Serial-ATA interface with RAID 0,1 function
- Integrated GigaRAID IDE RAID Interface
- Dual LAN solution with Intel® PRO/1000 CT integrated.
- Supports 6-channel Dolby Digital audio via S/P-DIF output

Dual LAN | Serial ATA | IEEE 1394 | ATA133 RAID | Intel® PRO | USB 2.0 | DualBIOS™ | 6-Channel Audio | Dual View | EasyTune™ 4 | Q-Flash™ | @BIOS™

## K7 Triton™ series
### GA-7N400 Pro nForce2 Ultra 400 SPP/ MCP-T Chipset



- Supports AMD Athlon™ XP FSB 400MHz processor
- Supports Dual Channel DDR400 memory architecture
- Integrated Serial-ATA interface with RAID 0,1 function
- Integrated GigaRAID IDE RAID Interface
- Integrated 10/100Mb Ethernet controller
- Supports 6-channel Dolby Digital audio via S/P-DIF output
- Integrated IEEE 1394 FireWire interface

Serial ATA | IEEE 1394 | ATA133 RAID | USB 2.0 | DualBIOS™ | 6-Channel Audio | EasyTune™ 4 | Q-Flash™ | @BIOS™

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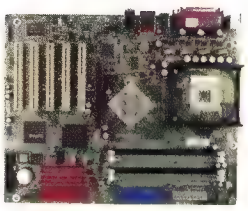
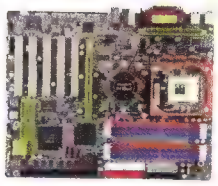


## EPOX
4PCA3+

**PRICE:** $325
**SUPPLIER:** Westan (03) 9543 7733
**INTERNET:** www.westan.com.au

The 4PCA3+ packs a whopping six IDE slots and two SATA ports, perfect for a jumbo-sized array. A PCB-mounted LED displays error codes, great for quick boot troubleshooting, and the inclusion of Gigabit Ethernet and ECC DIMM support would make this the board of choice for a single processor server. While USB, dual channel DDR and S/PDIF ports would set you up nicely for a home machine setup.

QUALITY ..... 1 2 3 4 5 6
FEATURES ..... 1 2 3 4 5 6
VALUE ..... 1 2 3 4 5 6
OVERALL ..... 1 2 3 4 5 6



## GIGABYTE
8KNXP Ultra

**PRICE:** $1,088
**SUPPLIER:** Synnex 1300 880 038
**INTERNET:** www.synnex.com.au

How could a motherboard possibly cost over $1,000? The short answer is: if it has *everything* built in. The 8KNXP is geared towards the server market, and is the only board in this Labs with an Ultra360 SCSI controller. Ultra360 SCSI still delivers over twice the bandwidth or IDE or SATA. The 8KNXP also features just about every other integrated peripheral except video, making it an expensive choice, but a one stop shop.

QUALITY ..... 1 2 3 4 5 6
FEATURES ..... 1 2 3 4 5 6
VALUE ..... 1 2 3 4 5 6
OVERALL ..... 1 2 3 4 5 6

*continued from p72...*

Companies in discussions with Phoenix include Compaq, which has a prototype Tablet PC with an instant-on button giving direct access to a calendar and contacts list; Fujitsu Siemens, which uses the F4 button on a PC keyboard to open up FirstWare before booting into Windows; and McAfee, which is discussing making its antivirus software a FirstWare application.

Intel's vision is along similar lines. Its Extensible Firmware Interface (EFI) promises a tiny but independent OS and, like cME, would allow system builders to place diagnostic tools inside that would still be accessible if the main OS crashed.

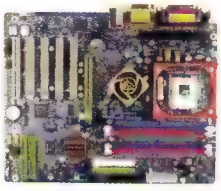
However, Intel's solution looks more likely to be a long-term replacement for the BIOS, while Phoenix will have products on the market this year.

## SiS 655

Pentium 4 | Celeron

SiS wasn't far behind Intel with its own dual-channel chipset – the 655. This goes one step further than the E7205 to offer PC2700 support for a bandwidth of 5.4GB/sec, far in excess of the 533MHz FSB Pentium 4's capability, giving extra room for AGP and I/O. AGP 8x support is also part of the specification. A proprietary interconnect, which SiS calls MuTIOL 1G, provides a bandwidth of 1GB/sec between the north bridge and 963 south bridge. The latter features integrated controllers for six-channel audio, USB 2.0 and FireWire, bolstering the chipset's appeal.

Performance is good compared to the 845 and E7205, mainly due to the additional bandwidth and 1GB/sec MuTIOL 1G link.

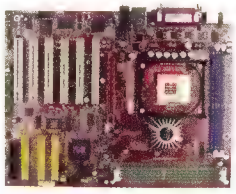


## GIGABYTE
SINXP1394

**PRICE:** $439
**SUPPLIER:** Synnex 1300 880 038
**INTERNET:** www.synnex.com.au

The Gigabyte SINXP1394 is a little pricey, but supports both SATA and IDE RAID, and Hyper-Threading, as well as FireWire. The board ships with a Dual Power Voltage Regulator Module, a daughterboard that sits close to the back-panel I/O ports, whose purpose is to assist in power regulation. Board layout is also good. With strong performance, it's a good mobo for a 533MHz Pentium 4-based system.

QUALITY ..... 1 2 3 4 5 6
FEATURES ..... 1 2 3 4 5 6
VALUE ..... 1 2 3 4 5 6
OVERALL ..... 1 2 3 4 5 6



## MSI
655 Max-FISR

**PRICE:** $250
**SUPPLIER:** MSI (02) 9748 0070
**INTERNET:** www.msicomputer.com.au

Based around the SiS655 chipset, the MSI 655 MAX-FISR is a well rounded Socket 478 motherboard. With six PCI slots, support for six USB 2.0 ports, Firewire, IDE and SATA RAID, connectivity options for this board are excellent. Board layout is unconventional, and the power connector is perilously close to the CPU socket, which could interefere with cooling. The 655 also ships with a Bluetooth connector as a bonus.

QUALITY ..... 1 2 3 4 5 6
FEATURES ..... 1 2 3 4 5 6
VALUE ..... 1 2 3 4 5 6
OVERALL ..... 1 2 3 4 5 6

## SiS648

Pentium 4 Celeron

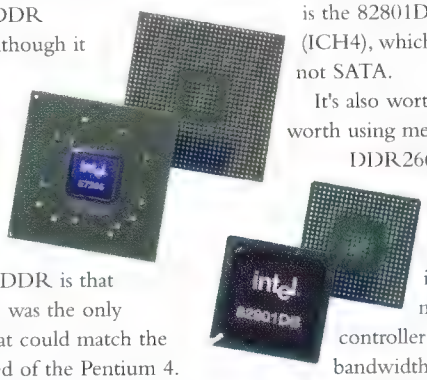
SiS's 648 is one of the oldest chipsets on test here, and parallels many of the features of the Intel 845. It still has AGP 8x, 533MHz FSB and DDR333 support, though. In fact, the only major feature lacking compared with the 648 is dual-channel memory architecture.

The memory controller supports only DDR and can offer bandwidth up to 2.7GB/sec under DDR333, which is less than the 4.2GB/sec needed by a 533MHz FSB Pentium 4. Ultimately, it's still useful as a budget Pentium 4 or Celeron chipset, but it's not a top performance option.

## INTEL E7205

Pentium 4 Celeron

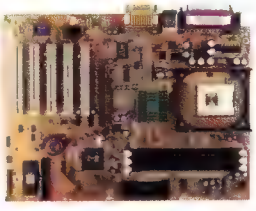
Recently Intel recognised it needed a stop-gap chipset with dual DDR before the release of the Springdale and Canterwood (865 and 875 respectively). Enter the Granite Bay, now named the E7205. It has a wider set of capabilities than the 845 chipsets, and supports dual-channel DDR memory and AGP 8x although it doesn't support an 800MHz FSB. It also offers USB2.0, ATA/100 and Dolby 5.1 integrated sound.




One reason Intel has traditionally pushed RDRAM over DDR is that dual-channel RDRAM was the only memory technology that could match the high front side bus speed of the Pentium 4. Now with dual-channel DDR, the E7205 takes full advantage of the 533MHz FSB (front side bus) used by Northwood B Pentium 4 CPUs, even when using DDR266 RAM.

The E7205 northbridge Memory Controller Hub (MCH), and the Southbridge is the 82801DB I/O Controller Hub (ICH4), which supports ATA/100 but not SATA.

It's also worth noting that it's not worth using memory faster than DDR266, such as DDR400 and DDR333. The E7205 relies on a synchronous memory bus – using inexpensive DDR266 memory, the memory controller supplies 4.3 GB/sec of bandwidth, matching that of the Pentium 4 533 MHz CPU bus.



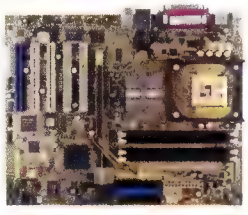
## ABIT

SR7-8X

**PRICE:** $165
**SUPPLIER:** Altech (02) 9735 5655
**INTERNET:** www.altech.com.au

One of only three ABIT boards in our roundup supporting ATA/133, the SR7-8X lacks SATA and features only two-channel audio. However, what it lacks in hardware features, it makes up for in scalability. The overclocking function includes CPU frequency; multiplier, CPU and memory voltage adjustment for maximum system performance. For another $20, we'd recommend the KD7-SL as the better buy.

QUALITY ..... 1 2
FEATURES ..... 1 2 3
VALUE ..... 1 2 3 4
OVERALL ..... 1 2 3



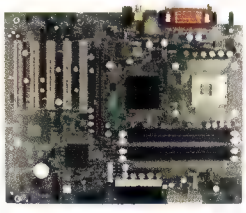
## ASUS

P4G8X Deluxe

**PRICE:** $375
**SUPPLIER:** Acheiva (02) 9742 3288
**INTERNET:** www.achieva.com.au

A little lacking in the feature department, the P4G8X Deluxe is lean in some big areas. Short 800MHz, DDR400 or DDR333 support, its biggest selling points are its BlueMagic PCI slot, inclusion of PC-cillin antivirus software, and Asus PC Probe for system monitoring. If you're after a better rounded board, and want to save some money, we'd recommend you check out the Albatron 865P Pro II.

QUALITY ..... 1 2 3 4
FEATURES ..... 1 2 3 4
VALUE ..... 1 2 3
OVERALL ..... 1 2 3 4



## TYAN

Trinity S2662AN

**PRICE:** $387
**SUPPLIER:** Altech (02) 9735 5655
**INTERNET:** www.altech.com.au

The S2662AN differs from most of the mobos in this Labs in that it's designed as a workstation class board. It features Gigabit LAN, a healthy four DIMM slots, five PCI slots and two USB 2.0 ports, but it's only concession to the consumer world is its inclusion of a six channel digital SPDIF RCA audio output. It's a costlier board, but certainly robust and worth the outlay. For consumers, go for an 865-based board.

QUALITY ..... 1 2 3
FEATURES ..... 1 2 3
VALUE ..... 1 2
OVERALL ..... 1 2 3

# ACEDVio

## One card for all Video Editors

MEDIA TECHNOLOGIES

### One card for all Video Editors

ACEDV is the world's only analog and DV editing card that is completely compatible with hundreds of video editing applications and all widely used video equipment.

Whether it's a Windows® or Mac OS® computer, VHS or DV camera, Vegas®, Final Cut Pro®, Xpress® DV or Premiere® editing software, Canopus ACEDV is the one card for all editing environments providing the broadest compatibility, longest product life and highest return on investment.

Includes
Sonic Foundry®
Vegas® 4.0
Professional Digital Video and Audio Production Software

**Key Benefits**

- Provides analog and DV hardware compatibility for leading editing and DVD authoring applications including: Vegas®, Final Cut Pro®, Xpress® DV, Premiere®, Editors, MediaStudio® Pro and Windows Movie Maker.
- Connects to all widely used analog and DV cameras and decks including: VHS, S-VHS, Hi8, Digital8, DV and DVCAM. (PAL and NTSC standards supported).
- Compatible with Windows and Mac OS computers.
- Provides the industry's highest quality analog to DV and DV to analog video conversion with locked audio support.
- Provides video output to a monitor or television while editing.
- Features adjustable brightness, contrast, saturation, hue and sharpness controls on analog video input*.
- The broadest editing software support and video equipment compatibility ensures a longest product life and a high return on investment.
- Three-year warranty.

*Windows only software

RRP $999

canopus

www.canopus-aust.com

# The ultimate Upgrade Kit

**The PC Authority Labs team shows you how to give your PC a new lease on life.**

Why buy an entirely new PC for a couple of thousand bucks when you can achieve the same result by spending less than half that amount? If your PC is reasonably new, then the chances are most components in it are still quite workable and it's only the performance-related parts that need a bit of a kick in the pants. In this feature we take a look at your upgrade options for PCs from different eras, and show you how to get the most for your money.

We've taken PCs that are representative of the kinds of systems that have been on sale over the last few years and made them our upgrade platforms. We have a system from 2000, one from 2001 and one from 2002, and we've turned them into a variety of new machines, with better performance and even some new functionality. As a rough rule of thumb we've aimed to spend around one third the initial purchase price of the PC on core upgrade components, which should give it at least another two or three years of life.

The reason we didn't go back to 1999 or earlier is that a PC from this era will have so many old components that will need to be replaced that you might as well buy a new PC, or build one from scratch. With a PC from the Pentium II days, upgrading can easily become a cascading process. For example, to upgrade the processor, you need a new motherboard, which means new RAM, and a new power supply, which means a new case etc. And there's not much point attaching a 4GB 5,400rpm ATA/66 drive to a Pentium 4 – so that'll need upgrading too, and so on. By the end of the process, you'll be lucky to still have a floppy drive and mouse pad left from the original system. So, if you have an older PC like this, don't fret – we'll be running a full feature on how to build your own PC from scratch in an upcoming issue.

We've run a series of benchmarks on both the original machines and their upgraded counterparts to see the difference in performance the new components make in a variety of applications. We've also built a couple of specialist boxes out of the original PCs to show you the options you have when it comes to turning your old system into something new and funky.

So grab your Philips head screwdriver, your anti-static strap, your favourite high-caffeine beverage, and let's get stuck in.

**CONTRIBUTORS:** Nirmal Chandrasena, Dan Chiappini, Tim Dean, Dan Gardiner, David Kidd.

ILLUSTRATION: STUART TORRINGTON

## 2000 era PC

### ORIGINAL SPECS

Pentium III 500MHz (Slot 1); Intel 440BX; 128MB PC100 SDRAM; 8-12GB ATA/66; CD/DVD-ROM; 32MB TNT2 AGP; SB PCI-128 OEM; 17in curved; Windows 98 SE

### ORIGINAL SYSTEM

This PC represents the standard fare from early 2000. It sports a Pentium III processor, coupled to a ubiquitous Intel 440BX motherboard, 128MB of PC100 SDRAM and a 32MB NVIDIA TNT2 graphics card. The most popular OS from this time was Windows 98, although by the end of 2000, new PCs were being shipped with Windows ME. There's not a heck of a lot of difference between the two OSes, although Windows ME does have a slightly slicker interface, and makes key things such as installing drivers easier than in Windows 98.

Back in 2000 a PC like this was more than capable of performing most tasks, such as browsing the Net and running office applications like Office 97 or even the new Office 2000. The 128MB of RAM would have meant Windows would make quite a bit of use of the swapfile on the hard disk, thus slowing things down a bit. The swapfile also would have been held up by the 5,400rpm hard disk, which is slow by the standards of 7,200rpm disks of today.

In today's applications, the 2000 era PC would still be passable, although the main bottleneck will be the RAM, and running things like Windows XP or Office XP would prove more frustrating than fruitful. You can see how the 2000 era PC runs today's applications from the SYSmark2002 benchmark scores on *page 88*.

The NVIDIA TNT2 was a top 3D card for the time, and will comfortably run games like Half-Life, although it pales in comparison with even entry-level 3D cards available now. If you want to play anything more intense than a real-time strategy, or just about anything with 3D from today, the TNT2 will prove woefully inadequate, as shown by the 3DMark2002 benchmarks on *page 88*.

### BUSINESS UPGRADE

When it comes to configuring a PC for business usage, compared to home use, there are a couple of differences. A home PC will often be running one or two large applications, such as games or video editing, meaning the CPU is the key component for speed. However a business machine is more likely to be running multiple applications, such as email, Internet browser, word processor, spreadsheet etc – all concurrently. This means that while the CPU is important, it's RAM that is the performance bottleneck as all these applications are taking up memory. When you run out of RAM, your hard disk steps in to fill the gap, and then the crunching, and waiting, begins as the swapfile does its work.

In our upgraded business PC, we have swapped out the motherboard so we can fit in a faster Duron 1.3GHz processor, along with 256MB of DDR RAM. As RAM is so inexpensive these days, if you want more, it will only cost around $100 to put in an additional 256MB on top of that. You can see in the benchmarks on *page 88* that the Duron with 256MB of RAM delivers over twice the performance of the original system.

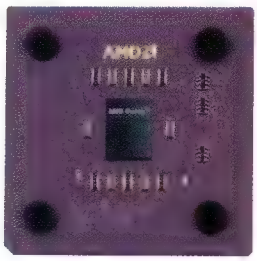
The other main change with the business PC is the inclusion of Windows XP ▶

## SPECS

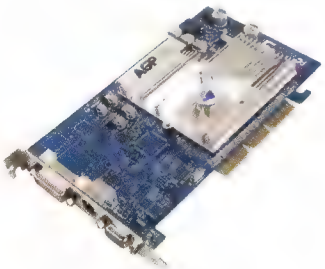
### 2000 BUSINESS UPGRADE

**Total cost: $750-$1,000**

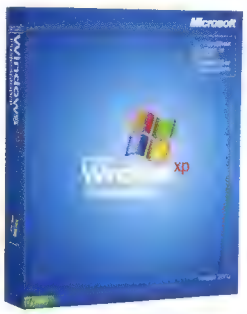
**AMD Duron 1.3GHz**
**PRICE:** $100
**ONLINE:** www.amd.com



**GeForce4 MX440**
**PRICE:** $100-$200
**ONLINE:** www.nvidia.com



**WindowsXP Professional**
**PRICE:** $675 ($463 upgrade, $182 academic)
**ONLINE:** www.microsoft.com



**UPGRADE SPECS**

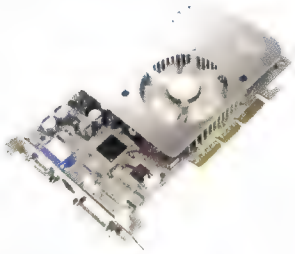
Duron 1.3GHz; KT400 motherboard; 256MB PC2100 DDR RAM; 8-12GB ATA/66 CD/DVD-ROM; GeForce4 MX440 AGP; SB PCI-128 OEM; 17in curved; Windows XP Pro ▶

## 2000 HOME UPGRADE

**Total cost: $1,000–$1,200**

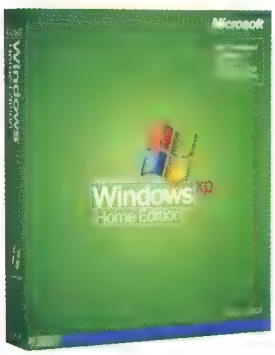
### GeForce 4 Ti4200

**PRICE:** $330
**ONLINE:** www.nvidia.com



### Windows XP Home

**PRICE:** $463 ($237 for upgrade)
**ONLINE:** www.microsoft.com




**UPGRADE SPECS**

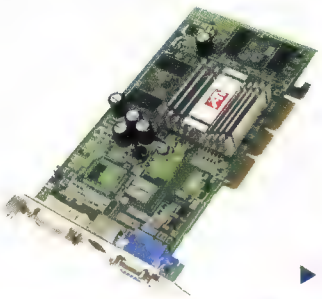
Duron 1.3GHz; KT400; 256MB PC2100 DDR RAM; 40GB ATA/133 7,200rpm hard disk; CD/DVD-ROM; GeForce4 Ti4200; SB PCI-128 OEM; 17in curved; Windows XP Home

## 2001 HOME THEATRE UPGRADE

**Total cost: $600-$800**

### Radeon 9000 + TV output

**PRICE:** $170
**ONLINE:** www.ati.com



Professional. The only reason we chose Pro over the Home edition is you need Pro if you want to connect to a network with a domain, such as in an office.

We've also changed the graphics card to a GeForce4 MX440, not for the 3D performance, but because the old AGP 2x TNT won't work in the KT400 motherboard, which accepts AGP 4x as a minimum. The MX440 should cost you under $100 though, and it also delivers a greater range of resolutions and refresh rates to boot.

The rest of the specification has been left the same to keep the cost of the upgrade down. Still, by just upgrading these components, you can add a good couple of years to the life of your business PC.

### HOME UPGRADE

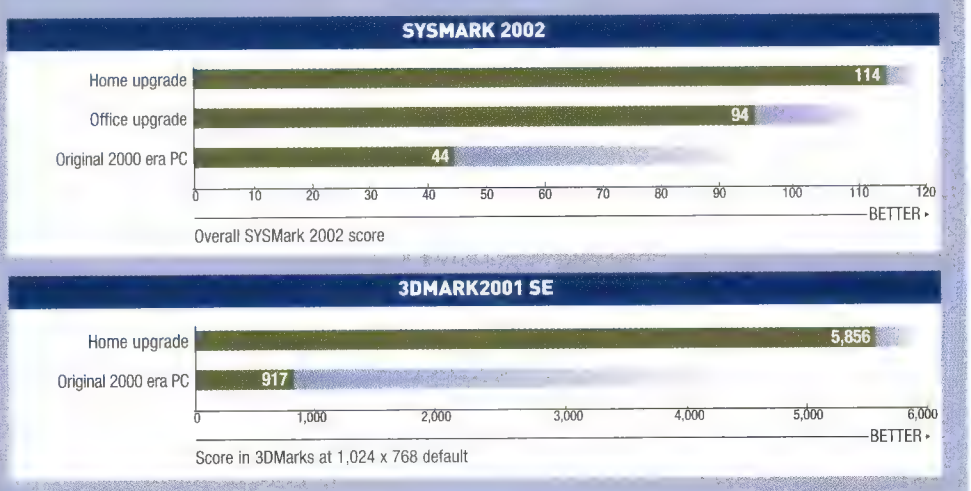
The target for the home system upgrade from the original 2000-era PC was to breathe some new life into the system and make it capable of running today's applications and games for the lowest possible cost.

We've gone for the same Duron 1.3GHz and 256MB of DDR RAM as in the office PC as the Duron is unparalleled for price/performance in the budget arena. If you want to run some more serious applications, like video editing, you can always use the same KT400 motherboard and replace the Duron with an Athlon XP for another $100 or so.

Many home users want to play games, and the old TNT2 just can't cut the mustard these days. We've chosen to replace it with a GeForce4 Ti4200 as it delivers very impressive performance for the price and will allow you to play the latest games at reasonable quality settings and frame rates. We ran the original system and the upgraded system through 3DMark2002 to see how they compare, and as you can see, the difference is huge – a massive six times faster.

Unlike business PCs, which will usually utilise a network for storing documents and files, a home PC needs to keep everything locally. For

## 2000 SYSTEM PERFORMANCE ANALYSIS



this reason we have upgraded the hard disk to a 40GB 7,200rpm drive, giving you plenty of space, and a boost in I/O performance too.

We've also upgraded the OS to Windows XP Home, as you don't need the extra features of the Professional edition, and Home edition is a bit cheaper as well.

## 2001 era PC

### ORIGINAL SPECS

Pentium III 800MHz (Slot 1); 100MHz FSB; Intel 440BX; 128MB PC133 SDRAM; 20GB 7,200rpm ATA/100 hard disk; 8X max. DVD-ROM/CD-R/CD-RW; 32MB GeForce2; SB Live! OEM; 17in curved; Windows ME

### ORIGINAL SYSTEM

In 2001, the Pentium III was reaching its peak, and while the Pentium 4 had hit the streets by this time, its performance was uninspiring and the price was high. Our 2001-era PC sports a 800MHz Pentium III on a 440BX motherboard, although by 2001 the new PGA version of the Pentium III was also starting to spread, coupled with the 815 motherboard. The CPU is backed up by 128MB of PC133 SDRAM. In 2001, 7,200rpm hard disks were becoming the norm, and the GeForce2 GTS and SoundBlaster Live! were the standards in 3D graphics and sound respectively. You could also expect a DVD-ROM drive as standard on most systems, or perhaps a fairly slow CD-R/RW – around 8x was the max back then.

The 800MHz Pentium III would be fine for most office applications, although like the 2000-era PC, the RAM would have proved to be one of the main performance bottlenecks by forcing Windows to use the swapfile. Just throwing in another 256MB or so would do it a world of good for most applications. For this reason, we've chosen some more interesting and specialised systems for the upgrade to show you the kinds of things you could turn your 2001 PC into.

### HOME THEATRE UPGRADE

An increasingly popular upgrade option for many PCs is to turn it into the core of a home theatre. The Pentium III 800MHz should be ample for running DVD movies without a decoder card, although there are a couple of components you'll want to replace to get the best DVD experience.

The GeForce2 GTS was a decent card for DVD playback through your monitor, although if you want to output the signal to your TV (or if you have the cash – a plasma screen or projector), then you'll want something like a Radeon 9000 with TV output. The Radeon has superior 2D and video quality, and the TV output makes it easy to integrate it into your existing A/V setup.

The SoundBlaster Live! should be sufficient for a basic home theatre setup, although if you want digital 5.1 output, then you'll need to spend another $75 or so on a Live! DE, or $170 on an even more fully-featured Creative Audigy DE. We haven't included speakers, as there is a massive range, from basic all the way out to multi-thousand dollar professional rigs, or you can just plug your PC into your existing home sound system.

We've also added a little more RAM to insure smooth operation under Windows XP, as well as an additional hard disk so you can store videos and music.

### DIGITAL VIDEO UPGRADE SYSTEM

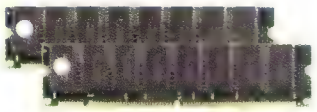
One area of computing that has absolutely taken off over the last couple of years is digital video. You can now get a decent quality digital video camera for around $1,000, and your PC is the perfect platform for editing the footage.

First off you'll need a way to get the footage into your PC. If you have a DV camera, you'll need to use FireWire, or USB 2.0, to transfer the raw data to your system. FireWire cards can be obtained for as little as $60-$70, and USB 2.0 for around $50. If you have an analog video camera, you'll need a video capture card to convert the footage into digital information. Capture cards start at around $100 by themselves, but you're probably better off going for a package with a quality capture card and video editing software suite. This can cost anything between $400 and $2,000, depending on what your requirements are. We've recommended the Matrox RT.X10 (*reviewed February 2003, page 43*) which can produce professional results for the home user. Note, however that the machine was tested with the original 32MB GeForce 2 GTS to give an indication of overall system performance, and you can see how it fares in the benchmarks on page 90.

You'll also need a sizable hard disk to store all the raw and edited footage, so we've added a 80GB 7,200rpm hard disk to the system. Drive speed is very important with DV. ▶

### 256MB PC133 SDRAM

**PRICE:** $100



### UPGRADE SPECS

Pentium III 800MHz (Slot 1); 100MHz FSB; Intel 440BX; 256MB PC133 SDRAM; 40GB ATA/133 7,200rpm hard disk; DVD-ROM/CD-R/CD-RW; Radeon 9000 w/TV output; SoundBlaster Live! OEM; 17in curved; Windows XP Home

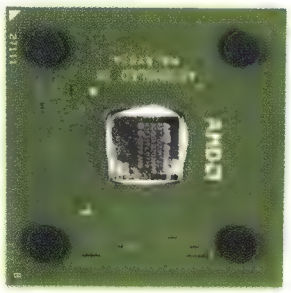
## 2001 DIGITAL VIDEO UPGRADE

**Total cost: $1,500-$2,500**

### Athlon XP 2000+

**PRICE:** $150

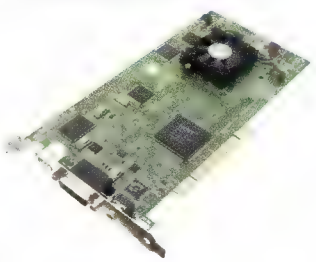
**ONLINE:** www.amd.com



### Matrox RTX.10

**PRICE:** $1,400

**ONLINE:** www.matrox.com



### UPGRADE SPECS

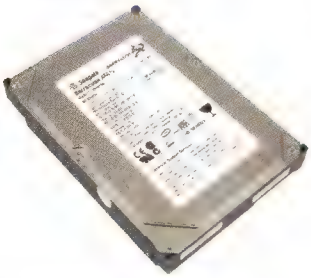
Athlon XP 2000+; KT400 motherboard; 512MB DDR333 DDR RAM; 80GB ATA/133; 7,200rpm hard disk; CD/DVD-ROM/CD-R/RW; GeForce 2 32MB and/or video capture card; SB Live! OEM; 2x 17in curved; Windows XP Home ▶

## 2001 3D GAMING UPGRADE

**Total cost: $1,000-$1,200**

### 40GB ATA/133 7,200rpm hard disk

**PRICE:** $150



### 256MB PC2700 DDR RAM

**PRICE:** $100

**UPGRADE SPECS**

Athlon XP 2000+; KT400 motherboard; 256MB PC2700 DDR RAM; 40GB ATA/133 7,200rpm hard disk; CD/DVD-ROM/CD-R/RW; GeForce4 Ti4200; SB Live! OEM; 17in curved; Windows XP Home

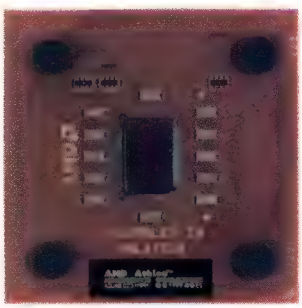
## 2002 PERFORMANCE UPGRADE

**Total cost: $1,000-$1,500**

### Athlon XP 2700+

**PRICE:** $400

**ONLINE:** www.amd.com



### Radeon 9800 PRO

**PRICE:** $900-$1,000

**ONLINE:** www.ati.com

Some people claim that only SCSI drives have the speed needed for DV, but these days 7,200rpm IDE disks are fast enough. As an alternative, though, you could buy two 40GB drives and a RAID card for $150, or even better, get a motherboard with a RAID controller built in, for extra I/O performance.

DV editing is a very processor-intensive task, so we've upgraded to a KT400 motherboard with an Athlon XP 2000+ with 512MB of DDR333 RAM. This should be more than enough to do the trick, although for even faster performance, you'll want to go for one of the latest Pentium 4 systems – but it'll cost you.

### 3D GAMING UPGRADE SYSTEM

Back in 2001 the Pentium III 800MHz and GeForce2 GTS were powerful enough together to deliver high frame rates in all the latest games. These days, however, with games like the very CPU-intensive Morrowind, the Pentium III 800MHz is starting to show its age. Also with the upcoming DirectX 9 titles such as Doom III and Half-Life 2, the GeForce2 GTS will not support many of the advanced features, and you'll end up watching a slide show instead of a smooth game.

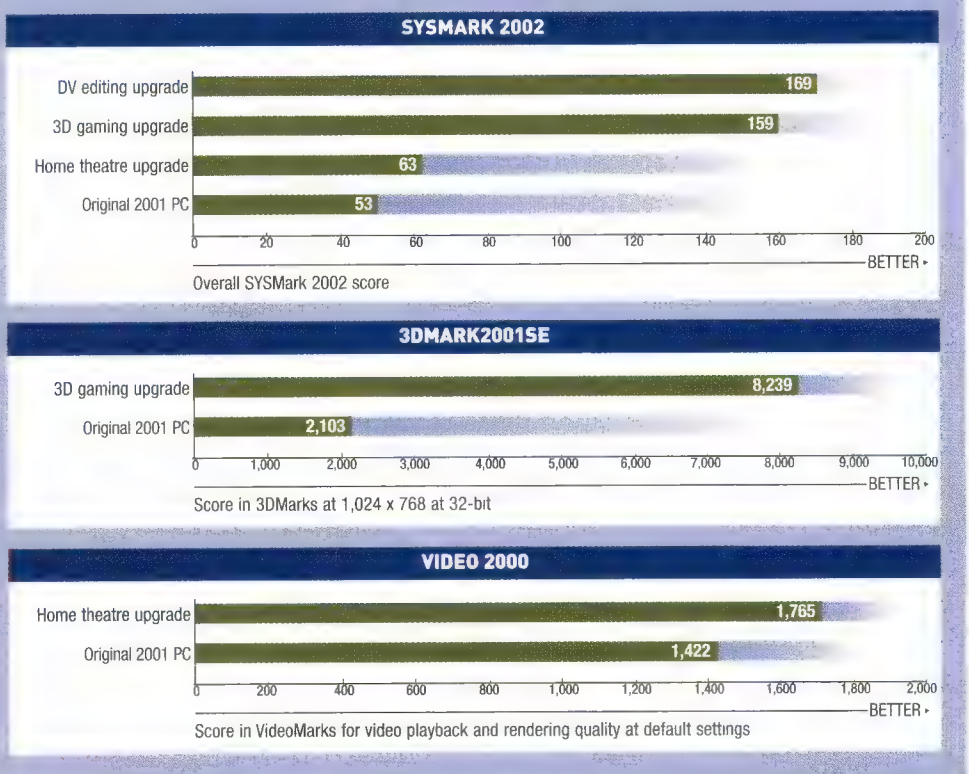
To boost performance to acceptable gaming levels, we've gone for a KT400 motherboard coupled with an Athlon XP 2000+ and 256MB of DDR RAM. This should give you enough horsepower to handle anything available today, and will see you through another year or so into the future. For a little more longevity, you sould also consider another 256MB of RAM too.

The GeForce4 Ti4200 card is absolutely the best in terms of price/performance, and while it can't compete with the likes of the Radeon 9800 Pro or GeForce FX5900, you can pick one up for as little as $250-$300. As you can see from the 3DMark2002 benchmarks, the Athlon XP and Ti4200 put in a much better showing than the original 2001-era system.

We've also thrown in Windows XP Home, which is a little more stable and manageable than Windows ME.

The only other component we would strongly recommend you upgrade if you have the cash is the monitor. High resolution gaming is just not really worth the time on a 17in screen, and we'd suggest a 19in screen as a bare minimum. Prices are dropping, but you can still expect to spend $500 for a decent screen, or $750 for a good flat CRT.

## 2001 SYSTEM PERFORMANCE ANALYSIS



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## 2002 era PC

### ORIGINAL SPECS

Athlon XP 1800+; VIA KT266A motherboard; 256MB DDR266 RAM; 40GB 7,200rpm ATA/100 hard disk; CD-RW combo ; GeForce3 Ti200; SB Live! 5.1; 17in curved CRT; Windows XP Home

### ORIGINAL SYSTEM

Last year the Pentium 4 was beginning to show its true colours as a top performance desktop CPU, but it was still squarely outmatched in the value stakes by the new Athlon processor. DDR RAM was also becoming the standard, with SDRAM finally going the way of the extinct plankton, graptolites.

With an Athlon XP 1700+, a KT266A-based motherboard and 256MB of DDR266 RAM, this system is still capable of performing most computing tasks today without too much trouble. The GeForce3 Ti200 card is also decent for gaming, although it will be put under stress shortly by the likes of Doom III and Half-Life 2. It also doesn't support all the advanced features in DirectX 9, so you'll be missing out on some great effects in the games to come over the next couple of years.

The SoundBlaster Live! 5.1 card is also pretty decent by today's standards, although the Audigy and Audigy 2 pack plenty more features if you're a sound enthusiast.

By 2002, most PCs were being shipped with CD-RW drives, and by the end of 2002, DVD-ROM/CD-RW combo drives were also starting to proliferate.

You could live quite comfortably for another 12 months with this system before it really shows its age, but don't let that stop you from spending a little cash to bring it back up to speed.

### PERFORMANCE UPGRADE

The idea behind this upgrade was quite simple: bring this PC back up to full spec, and give it another year or so 'at the top'.

Most components in the system are still of good enough quality that you only have to look at the performance-based parts. These include the CPU, RAM and graphics card.

A new motherboard is not absolutely necessary, as the KT266A will support today's Athlon XP processors (only at a 266MHz front side bus though) and DDR RAM, but if you have the extra cash it would probably be wise to invest in a KT400 for the extra FSB and RAM speed.

Throwing in an Athlon XP 2700+ will bring this system well and truly into 2003, and will give it quite a bit more longevity. Upping the RAM to 512MB will also give you a measure of headroom, and you can see the difference these two components make in the SYSmark2002 results.

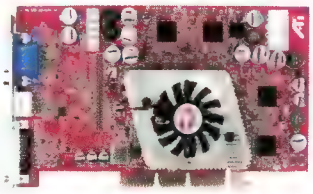
On the 3D front the Radeon 9800 PRO gives unparalleled performance and includes all of the latest 3D features as well. If you haven't got the $900-$1,000 for a Radeon 9800 Pro, the older 9700 Pro is still a serious piece of kit, and you can pick one up for around $700.

The only other thing you might want to add to this system, if you have the cash, is a better monitor. 17in CRTs are looking a bit small and boring by today's standards, so a 19in CRT, or even a 17in TFT, is the way of the future.

### 3D WORKSTATION UPGRADE

The 2002-era PC already has a reasonable specification and some good quality components, so this makes a good starting point to build a powerful specialist 3D workstation.

3D applications like 3ds max, Lightwave and Maya are all incredibly CPU and graphic card-intensive, so you really need a ▶



### UPGRADE SPECS

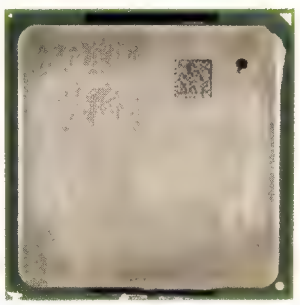
Athlon XP 2700+; VIA KT266A; 512MB PC2100 DDR; 40GB 7,200rpm ATA/100 hard disk; CD/DVD/CD-RW; Radeon 9800 PRO; SB Live! 5.1; 17in curved; Windows XP Home

## 2002 3D WORKSTATION

**Total cost: $2,000-$3,000**

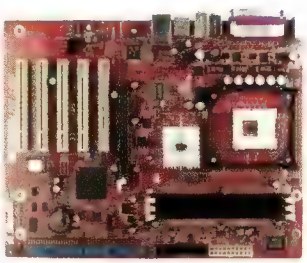
### Pentium 4 2.53GHz

**PRICE:** $370
**ONLINE:** www.intel.com



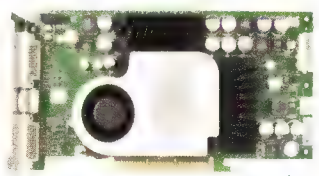
### i845PE motherboard

**PRICE:** $160-250
**ONLINE:** www.intel.com



### QuadroFX graphics card

**PRICE:** $1,000-$3,000
**ONLINE:** www.nvidia.com



▶

### Philips 109P420

**PRICE:** $900

**ONLINE:** www.philips.com

**UPGRADE SPECS**

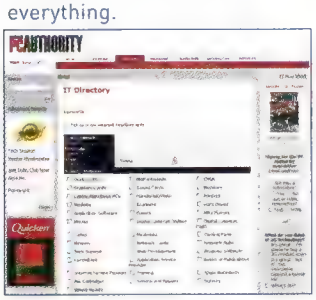
Pentium 4 2.53GHz; i845PE motherboard; 512MB DDR266; 80GB 7,200rpm ATA/100 hard disk; DVD-ROM/CD-RW; QuadroFX graphics card; SB Live! 5.1; 19in CRT; Windows XP Home

**SHOPPING AROUND.**

Note that these prices are only a guide, and you might able to shop around and get even better prices.

For a comprehensive listing of Aussie dealers check out *PC Authority's* IT Directory at www.pcauthority.com.au/dealers.asp, which can be searched by both product and by location Australia wide.

If you can't find a distributor for a particular piece of hardware, head over to the component manufacturer's Website and check out their list of regional distributors. If you're still having trouble, contact them directly by email or, if all else fails, check with Google. Google knows (just about) everything.




Special thanks go to AMD (www.amd.com) and Achieva (www.achieva.com.au) for supplying us with components for testing. ■

powerhouse in order to work well. The Pentium 4 is still more expensive than the Athlon, but it clearly delivers the best performance. We've opted for an Intel 845PE-based motherboard with a Pentium 4 2.53GHz CPU with Hyper-Threading (HT). HT is a new processor technology that more efficiently uses the CPU's resources to specifically take advantage of multitasking environments and multi-threaded applications. The best thing is, most 3D applications are natively multi-threaded, so you'll get the most from HT straight out of the box.

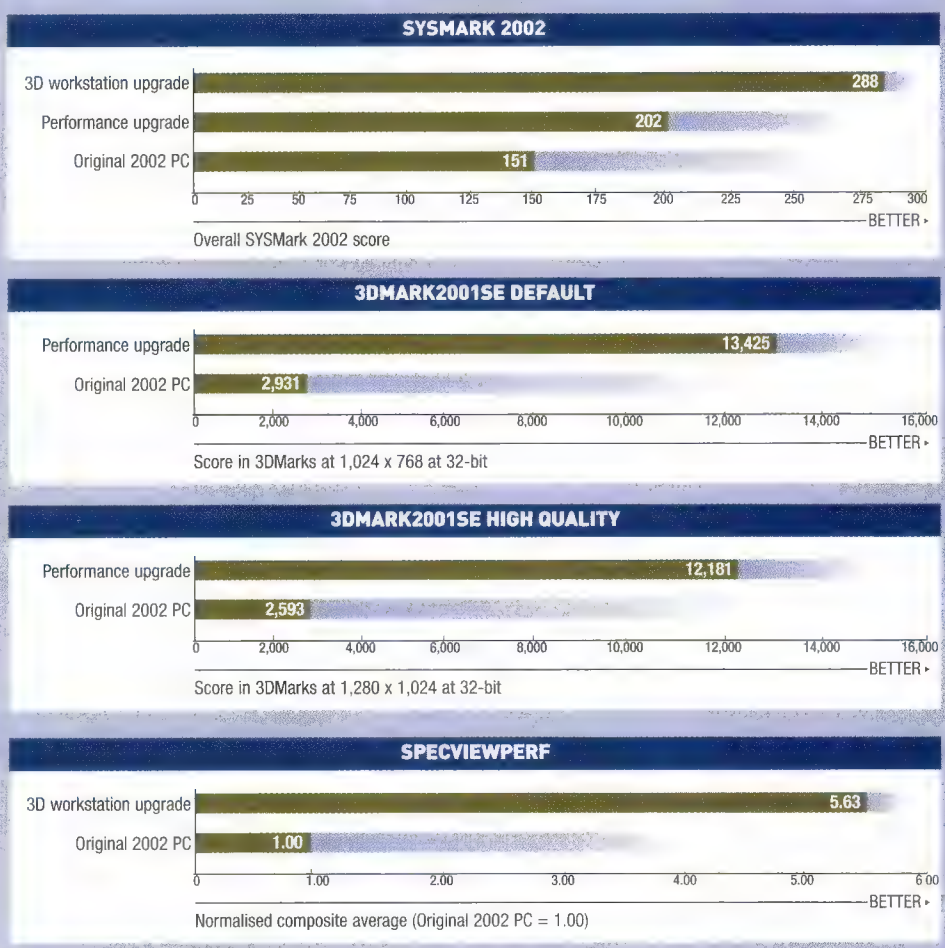
Whacking in 512MB of RAM will also allow you to manipulate large files without slowing down to access the page file.

On the 3D front, you need serious 3D graphics card power. Professional 3D applications utilise OpenGL for on-screen rendering, and a professional-quality 3D card, such as a monsters like a FireGL or 3Dlabs Wildcat card will be optimised for this kind of work – although you can expect to spend up to a few thousand dollars one one of these cards. In lieu of that, we have opted for a mid-range card, in the NVIDIA Quadro4 XGL, which is optimised for professional 3D, but is reasonably priced.

We ran the original system, with its GeForce3 Ti200 against the upgraded system in the professional 3D benchmark, SPECviewperf, which runs through a variety of full-on pro 3D applets, including 3D modelling, CAD/CAM and stresses the OpenGL subsystem to the max. If you take a look at the results, you'll see why a specialist 3D card is the way to go in professional 3D.

Otherwise, the only other component we recommend is a minimum of a 19in CRT or 17in TFT (or two) to give you the optimal viewing area. It's just not worth doing professional work on a 17in CRT. A 19in monitor will also give you comfortable viewing at up to 1,600 x 1,200 resolution. ■

## 2002 SYSTEM PERFORMANCE ANALYSIS



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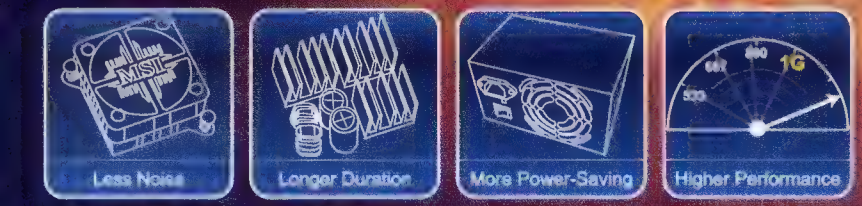


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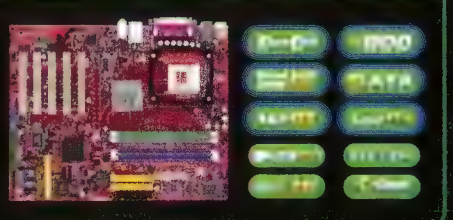

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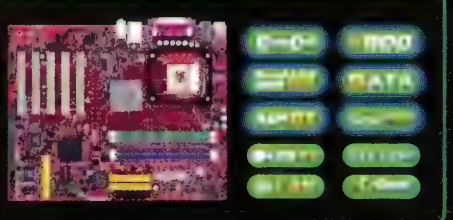

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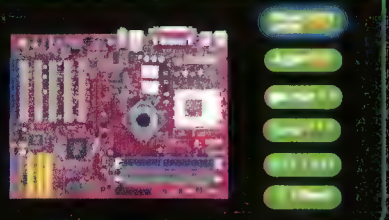

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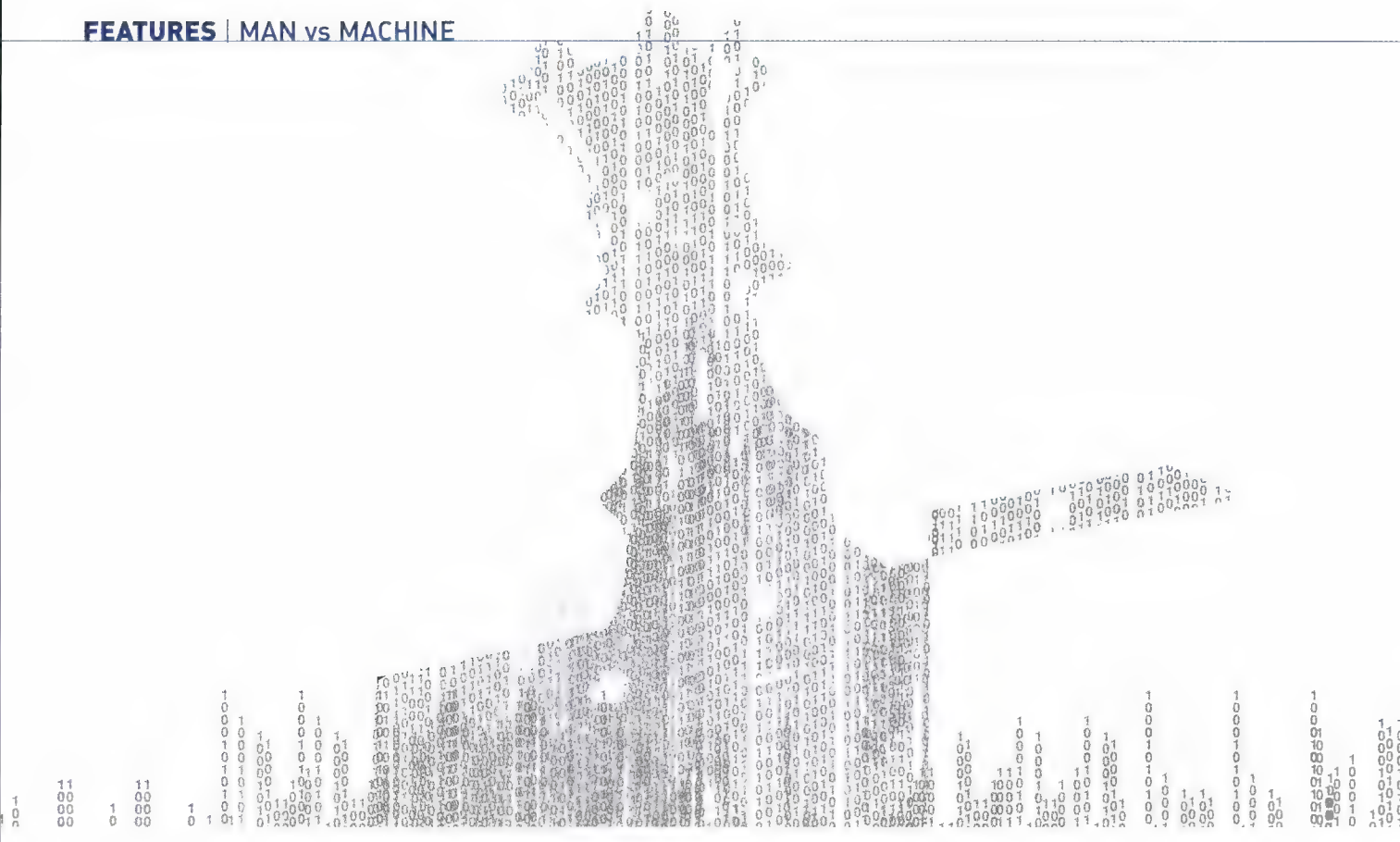

# MAN VS MACHINE

**Davey Winder** explores the moves that brought artificial intelligence out of the labs and into the black and white world of popular science.

Chess and computers have a long and, if you'll excuse the pun, chequered history. Perhaps the first chess-playing machine was The Turk back in 1769, invented by Baron Wolfgang von Kempelen. The Hungarian engineer built his mechanical chess player for an Austrian Empress who was said to be most impressed, as the moustached life-sized model beat all challengers. So successful was the machine, and those that followed, that they enjoyed fame into the 19th century, despite the fact that it was a fraud – a chess master hid in the box base and controlled all the movement.

In more recent years, and deserving perhaps a little more respect, was the memorable match between Garry Kasparov and the IBM-developed Deep Blue computer. This was the first time a computer had beaten a world champion, a grand master, and some might even say the greatest exponent of the modern game.

But was Deep Blue so different from The Turk? Sure, IBM invested big bucks in developing the parallel-processing monster with 400 chess-specific chips and the ability to search 200 million positions per second. Yet there's good ground to argue that it was ultimately still more a case of smoke and mirrors than a true reflection of computerised thought – that Holy Grail of AI that is both craved and feared. Back in May 1997, Kasparov even described Deep Blue as 'playing like a God' in some situations, but the truth was more down to Earth.

The year before, Kasparov had convincingly defeated Deep Blue

and so went into the contract negotiations and the match a little over-confident, which is borne out by a closer look at the contractual side of the contest. This agreed that Kasparov would have access to all the IBM machine's public games, essential at this level of chess, where grand masters will often study every tournament match in the opponent's history in order to best grasp their strategies and reveal their weaknesses.

Unfortunately, apart from the one match against Kasparov in 1996, Deep Blue hadn't played any games in public, with all its training and learning going on behind closed doors at the IBM research labs. Kasparov was told there was nothing to provide when he asked for this important information. In effect, he was entering into one of the highest-profile chess matches ever, blind. Deep Blue, on the other hand, had not only seen all of Kasparov's games, but had them sitting in its memory. If this wasn't bad enough, the negotiated match terms allowed IBM to adjust the Deep Blue program between games. The importance of this became apparent during the second game when it chose an unexpected defensive move instead of capturing an exposed pawn. Kasparov and the entire higher echelons of chess were shocked as to how the computer could have had such strategic foresight to defend while ahead, reducing the chance of counter moves by the opponent.

The Brains in Bahrain match between Deep Fritz and Vladimir Kramnik was the pinnacle of a long-running battle.

The truth is that IBM tweaked Deep Blue to allow for its failings in the first game. The in-between game tweaking continued and the rest is history, but it left a big question mark over the actual importance of Deep Blue in the field of AI.

Indeed, it may well be the case that the Russian mathematician Alexander Kronrod was right in 1965 when he predicted that computer chess would be the Drosophila (the much-experimented-upon fruit fly) of AI. 'Computer chess has developed much as genetics might have if the geneticists had concentrated their efforts starting in 1910 on breeding racing Drosophila. We would have some science, but mainly we would have very fast fruit flies.'

## BEYOND THE BOARD

Certainly, there has been a continuing trend with chess machines to rely on sheer processing power in the recent past – a reliance that has eroded the scientific import of the genre but not the impact that the development of the resulting machines has on the wider world of technology and business. The IBM Research Division remains one of the main movers and shakers in the world of parallel-processing, self-regulating computer system development.

Their autonomic computing project based upon the same SMASH (Simple, Many And Self-Healing) concept used in Deep Blue includes the likes of Blue Gene. This MPP (Massively Parallel-Processing) system builds on the lessons learned by the development of the chess computer and is used in the field of genome mapping, for example. Not that Deep Blue was ever just a glorified calculator – as if anyone with any appreciation of the art of technology could ever describe a massively parallel RS/6000 SP-based computer system thus. That underlying technology has been used to tackle highly complex and real-world computational problems in areas as diverse as cleaning up toxic waste sites, weather forecasting, financial data modelling, car design and drug therapy research – not forgetting running IBM's own high-volume, highly scalable Web server for some years.

Ignoring the debate over the true definition of AI, it's fair to say that, in its accepted sense, it's at the heart of numerous technologies we take for granted, way beyond the Deep Blue or Deep Fritz chess-playing machines – credit card fraud-detection systems, speech-recognition and advanced information search tools.

AI-based logistics-planning DART (Dynamic Analysis and Replanning Tool), which was used in both Desert Shield and Desert Storm campaigns, 'completely repaid three decades of investment in AI research', according to DARPA (Defence Advanced Research Projects Agency), and has now morphed into AMP (Analysis of Mobility Platform), which is currently used by the United States Transportation Command.

In the business world, which can often feel like being in a big chess game, you'll find numerical analysis systems using AI to profile the risk factors of potential customers in the financial sector, tailoring their offerings and adjusting interest rates accordingly. Rule-based decision systems are in use at superstore warehousing operations, where inspection of deliveries is key to maintaining quality and therefore brand confidence.

The AI comes in to identify the high-damage risk deliveries from the low-risk ones. For the consumer, you'll find basic AI in things like the Sony AIBO (Artificial Intelligence Bot – AIBO also means companion in Japanese). The genetic algorithms that power the robot dog's 'thinking' are straight out of the AI R&D toolbox.

## PLAYING THE GAME

Advances in processing power, plus the use of parallel-processing systems, are required along with programmed lessons in chess if a computer is able to even contemplate playing the game. Without the lessons (world-class tournament computers such as Deep Blue and Deep Fritz include chess grand masters on the programming teams), even these highly specialised and powerful systems would grind to a halt in the Borgesian labyrinth that is chess. They would explore every possible move, yet never find the right one, because as far as simple ▶

computer logic goes there is no 'right' move thanks to what is known as combinatorial explosion.

This concept is best explained with the example of a game as simple as noughts and crosses: for each of the first player's possible moves, the second player has eight possible responses; for each possible response, the first player has seven possible replies. To fill the nine-cell grid with noughts or crosses, there are 362,880 variations in plays. Play noughts and crosses against a computer and you'll lose, because it has no difficulty with such a relatively small database of gameplays.

It's impossible to do the same with chess, as it would mean a combinatorial explosion in an average game of 40 moves – something in the region of 10 to the 128th power (there are only 10 to the 80th power known atoms in the universe). So a computer exploring one billion gameplays per second would take around 10 to the 100th power years to fully analyse a chess game. To put that into perspective, the universe is thought to only be 10 to the 10th power years of age.

Instead, chess computers follow complex rule sets to limit the searching at each move tree – rule sets that we know as heuristics and are used today in antivirus technologies, for example. This ability, albeit a pre-programmed ability, to discount the negative branches of the move tree and so increase the effectiveness when it comes to analysing the positive moves is exactly what a human chess player does. It's called thinking, and so to this extent at least we can determine that chess computers do possess basic intelligence.

Yet a human player of Kasparov or Kramnik's standard doesn't have the sheer computational power of a Deep Blue or Deep Fritz machine, but they still manage to calculate the most appropriate move with the highest strategic value in the same amount of time. They can do this because they also possess intuition and experience. A computer may gain the latter, but there's a long way to go down the AI path before any computer will truly deserve to include intuition on its CV.

## BRAINS IN BAHRAIN

In the first big man vs machine chess match since that Kasparov defeat, we saw a new computer champion in the form of Deep Fritz taking on the 27-year-old world champion Vladimir Kramnik. The German-developed Fritz combined eight Intel CPUs and just 1.5GB of RAM with some impressive algorithm programming in order to compute six million moves per second.

Unlike the Kasparov vs Deep Blue match, this time around the playing field was a little more level, in that Kramnik was allowed access to the Fritz game printouts, just as he would any human opponent at this level of the game. He was also allowed adjournments and pre-match practice against Fritz. Its developers were only permitted to adjust the first move 'opening book' scenarios between games, and Kramnik would be familiar with these already.

To make it even fairer, there was no code modification or further training allowed for the three months prior to the match, which took place on the 19 October 2002 and became known as Brains in Bahrain (www.brainsinbahrain.com), thanks to the hosts, the Kingdom of Bahrain. The match finished in a draw, with Fritz coming back in the latter stages when it could pit its machine strength of stamina against the human weakness of fatigue-induced errors.

This was borne out by the final game of the match, which ended in a draw after only 21 moves, and also when Kramnik resigned in game six when a draw was possible. While the Fritz developers were happy enough not to have lost to the world champion and to pick up US$200,000, Kramnik can take similar solace in his US$800,000 pot.

- **1958** IBM 704 is the first computer to play chess and can manage 200 positions per second.
- **1973** Chess 4 software arrives and becomes the basis of most future development.
- **1983** Bell AT&T develops hardware that achieves 'master'-level play.
- **1985** Carnegie Mellon students develop ChipTest, the machine that would evolve into Deep Thought.
- **1987** Same students, having joined IBM, develop Deep Thought, the first chess machine using parallel processing to reach 750,000 positions per second.
- **1989** Deep Thought, with six CPU and rated at two million positions per second, loses its first match to Kasparov.
- **1990** Deep Thought II draws against Anatoly Karpov.
- **1996** IBM's Deep Blue uses new chip and speeds of three million positions per second, but still loses to Kasparov despite winning opening game.
- **1997** Deep Blue II achieves 200 million positions per second, is 'trained' by four grand masters and defeats Kasparov by the narrowest of margins.
- **2001** German chess program Deep Fritz 6 beats Kasparov and all top players except Kramnik.
  Deep Fritz 7 defeats all other computer opponents to win right to play World Champion Kramnik at the Brains inn Bahrain showdown.
- **2002** Brains in Bahrain match ends in a draw.
- **2003** Israeli-designed Deep Blue Junior draws with Kasparov after six rounds.

## GOING BACK FOR MORE

Before losing to Kramnik in 2000, Kasparov was the youngest world chess champion, first acquiring the title at age 22 in 1985. His loss to Deep Blue in 1997 left some deep scars (he claims that his loss was due to human tampering with machine), and he's been hankering for a rematch since. Unfortunately Deep Blue was pulled apart, never to play again. Six years later, Kasparov got his chance to restore faith in humanity with the Israeli-designed Deep Blue Junior, and this time he was allowed to study the computer's past matches.

Junior, which IBM describes as a portable Deep Blue, has an impressive track record in the world of chess software, having gained the title of world chess champion after defeating competing AIs in Europe last year. It runs off 16 processors in serial mode and processes a relatively measly 10 million positions per second compared to Deep Blue's 256 CPU parallel processing, 200 million positions per second.

The six matches played at the beginning of this year ended in a draw, with Kasparov beating the computer once, losing once and drawing four times. It's not all bad – like Kramnik, Kasparov pocketed a healthy sum of US$500,000 for turning up, and split US$300,000 with Junior's programmers. ■

# Three Awards in three months

**APC Magazine - March 2003**
*The Diamond View DV172 17" TFT LCD Monitor was awarded Editor's Choice*

**PC Powerplay - April 2003**
*The Diamond Pro 2070SB 20" CRT Monitor won the Gold Award*

**Atomic Magazine - May 2003**
*The Diamond View DV172 17" TFT LCD Monitor won the Hot New Product Award*

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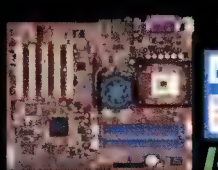


**IS7-G**

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- Supports Intel Hyper-Threading Technology and PAT
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# CONTENTS

REAL WORLD COMPUTING, MIND YOUR BUSINESS & TECH SUPPORT

## REAL WORLD COMPUTING

Get more out of your computer with *PC Authority's* panel of technical experts.


### ADVANCED WINDOWS 103

Hoping his crystal ball is in working order, **Jon Honeyball** looks at what could be the next Big Thing.

### PUBLISHING AND GRAPHICS 109

**Tom Arah** looks at the full range of add-ons available for Illustrator 10.

### LINUX 114

**Mike MacCana** loads up on hash and examines some suspicious packages.


## MIND YOUR BUSINESS

Our new section includes helpful advice, studies and tutorials to help your business make the most of IT.


### EMAIL MARKETING OR SPAM TACTICS? 127

Jane Dudman and **David Hellaby** reveal how new legislation and spam prosecuted general apathy could strip away the potential of email marketing.


## TECH SUPPORT

Our regular support section filled with hands-on tutorials, Q&A, how it works and more!


### Q&A 138

**David Moss** sorts out a confusion over policies and pops some unwanted balloons.

### HOW TO: DATA RECOVERY 144

The untimely destruction of your data doesn't necessarily mean that all is lost. **Ashton Mills** shows you how to bring it back from the dead.

### HOW TO: QUERY EXCEL 149

**David Hellaby** shows you how to tailor your spreadsheets with Excel's little known Web importer.

### JARGON BUSTER: STORAGE 153

Confused by all the technical terms thrown around in the computer world? **Nirmal Chandrasena** helps you cut through the jargon with our monthly glossary.

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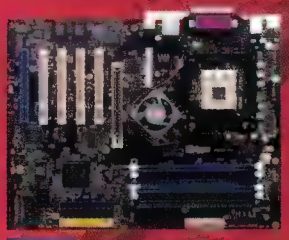

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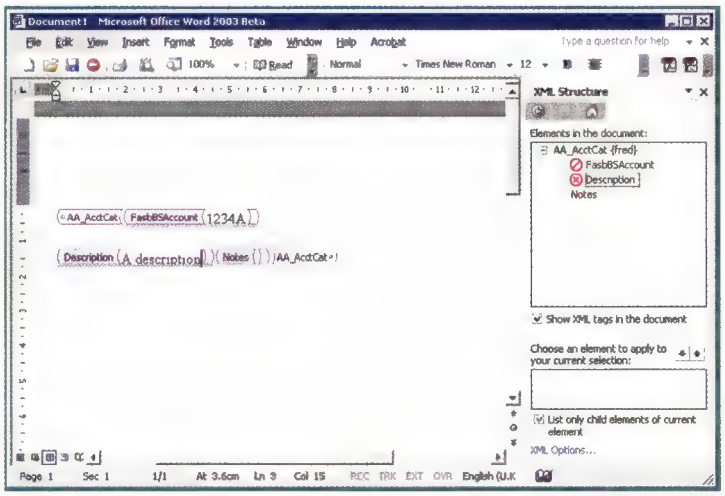
# ONWARD AND UPWARD

**Hoping his crystal ball is in working order, Jon Honeyball looks at what could be the next Big Thing.**

I'm utterly convinced that we're about to move into a completely new and exciting era in computing. Sounds like a big claim you might think, but the pieces are definitely slotting into place and there are already credible arrival dates for all the critical technologies. I've been fortunate enough to witness several such seismic shifts before, and each time there's a clear and decisive step – change in the technology and mindset.




Microsoft's Word working with an XML Schema from Access, with live validation and checking.

Back in the days of MS-DOS, people did plenty of good work using applications like WordPerfect and Lotus 1-2-3, but the move to 16-bit Windows computing with Windows 3/3.1 in 1990 brought many benefits over and above the graphical user interface. Its unification of printer driver models was, for many, a huge benefit, let alone everything else that you got: unified screen drivers; a mouse-driven GUI; and finally some semblance of proper memory management.

I know there were many nasties hiding under Windows 3's memory manager, but it did allow applications to share memory in a co-operative fashion, so proper multitasking no longer required a third-party task switcher like DESQview. Most important of all, it preserved and built on the best fundamentals of the DOS era – applications were mature and robust, and we understood clearly what we were supposed to do with them. I'll hurriedly skip over the fact that many of the first Windows implementations from well-known application vendors were grotesquely badly designed, despite several years of clear demonstrations of how to write good Windows applications from products like Excel and PageMaker.

The next significant era arrived in the mid-1990s, with the shift on the client-side to 32-bit computing and the appearance of robust and serious server technology. Once again, this built on the best of the previous generation, and NetWare 2.x, 3.x and 4.x were important leaders on the server front. The arrival of the Internet just spurred the need for robust desktop technologies, and we were firmly into the era of Microsoft's Office suite. This same model has served us well since then, but now it's time to move forward, and the next big shift is going to start the middle of this year and push through for the next two years or so.

The key technology is XML, the extensible markup language that finally and forever breaks the relationship between information and the way it's presented. XML has been around for a while, so you're probably wondering why I'm only now proclaiming it to be the future of computing. Well, XML by itself isn't enough, and nor is the provision of development tools. For XML to change the world, it needs to impact on everyone's day-to-day computing experience, and it's here that the next pieces are falling into place. Before I get too excited, though, I should admit that the picture still isn't fully complete, but the end-game is clear to see, the clock's ticking and it's time for us to board the train.

## The Office is open

Some months ago, I expressed concern over rumors that were circulating regarding Office 2003 having a heavy XML emphasis. I was concerned largely because Microsoft traditionally hasn't been the most open of companies when it comes to new data formats (and honestly, that's putting the matter in the kindest possible language).

Take a data format like that used by Excel: from the beginning, this has been known as BIFF, for Binary Interchange File Format. BIFF is a private binary data format and it isn't published anywhere. As if that weren't bad enough, with the arrival of structured storage Office documents, all BIFF information was poured into a stream inside a structured storage file, and to get to this you had to use Microsoft's development APIs, making it doubly hard to read the data held in a worksheet. You could get a document from Microsoft that described the BIFF format, but this required signing an NDA (non-disclosure agreement) and so was only made available if you were considered 'friendly'. Just to add insult to injury, it appears that a lot of the BIFF format either wasn't documented at all or was somewhat incomplete. The bottom line was clear – Microsoft didn't want you to read BIFF files except from Excel, and the same applied to the document format of Word and the other Office applications.

Claims from Microsoft that it has now done a full 180-degree turn might rightly be treated with considerable suspicion. The initial hints of this came a few months ago ▶

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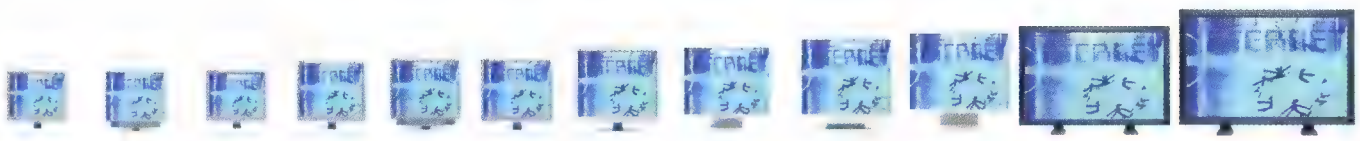

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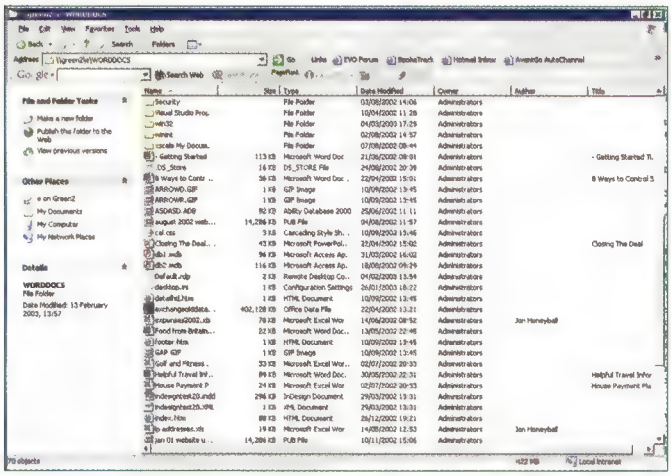

Custom properties can be surfaced in the Explorer UI today.

when the first beta of Office 2003 showed it could output XML data in a clear and coherent fashion, and that the text didn't appear to contain anything proprietary. After all, there's little point having an open, text-based XML file format if it's littered with large binary strings like <PRIVATE_MS_FORMAT>AB0F111944356FFCD B0 5566</PRIVATE_MS_FORMAT>.

At that time, I said the proof of the pudding remained in the eating, and that I wouldn't be convinced until it was clearly proven that Microsoft understood the meaning of the term 'open' when it came to document file formats. Well, I'm here again to tell you that I think it really does now. And it comes down to the work of one man, Jean Paoli, an ebullient and passionate exponent of XML, who has been driving Microsoft's XML vision. You might expect this from him – after all, his job title is Microsoft XML Architect – but titles are one thing and credibility is another. He was the co-founder of the W3C XML 1 standard, and when you listen to him speak on the subject you're left in no doubt that Microsoft XML data is open and shall remain so.

The extent to which Microsoft has managed to shoehorn XML support into the forthcoming Office 2003 product is something that surprised me. I can now sit inside Access and output some data as an XML data file and its associated Schema, load up Word and bring that data straight into it. I can work on a Word document and mark it up with XML Schema information, then punt it straight out into Excel. I can take some data from Excel and trundle it out onto a BizTalk server for queuing up into a large-scale workflow system. Or I could use the stunning XDocs application – now renamed InfoPath – and use traditional drag-and-drop formatting and design tools to create whatever sort of data entry form, information browsing or data manipulation I might want.

Was it worth 24 hours of flying to San Francisco to listen to Paoli for the afternoon, bubbling with enthusiasm about how Office 2003 was the first realisation of his lifelong XML dream? Yes, of course it was. When you talk to people of this calibre and understand the enormity of the volte-face that they've persuaded the Microsoft monolith to make, you can't help but be intrigued as to what they'll come up with next.

And therein lies another tale. You can now take it as read that Microsoft is right up at the bleeding edge of XML work anywhere in the world. Companies like Sun that are battling to make OpenOffice and StarOffice into credible Microsoft Office clones have missed the point. Yet again, Microsoft's opponents have aimed at the wrong target. In the meantime, Microsoft hasn't come up with the answer to 'what is a better Office?', but has chosen to redefine the question.

Look at the situation now. We have world-class development tools for creating Web Services that sit on servers. These servers and objects can be inside your network, or they can be on the other side of the world. We don't care what language you've used, or what platform they're running on. It could be Microsoft's common run-time, it could be Java, or it could be a BBC Micro – it doesn't matter a jot. We've already had one major wave of middle-tier engines in the shape of BizTalk and Transformation Services, and their equivalents from other firms, and everyone has learned from those experiences and are pushing ahead with next-generation solutions.

It's intriguing to see how Microsoft has taken a hatchet to its middle-tier engines and ripped them to pieces. BizTalk is no more, nor are the other platforms like Commerce Server. Everything is being distilled down into common shared platforms, so there will be one workflow engine, one commerce pipeline, a single application transaction server and so forth. And now we have the front-end tools, in the shape of the Office 2003 suite, to deliver a rich and meaningful experience to the desktop. It's now possible to move XML forward onto the desktop and backward to the back-end data stores too, and this is a new encompassing vision that demands serious attention.

## Where's the store?

There is, however, one major component missing, and that's storage. At this point, I have to make a leap of faith and do some speculating. If you think about it hard enough, it's a bit daft to store XML in text files called mydata.xml on an NTFS hard disk. We need a 'digital soup' store that just consumes XML data and looks after it. Well, I believe it's coming, and sooner than you might think. The WinFS (Windows File System) due to arrive with the Longhorn version of desktop Windows next summer is apparently just that, a native XML store. This timing and release pattern makes huge sense – release it on the client-side first and then follow up in the Blackcomb server release a year later, where the data loads will be far higher.

Why would you want to store information in a digital soup? The reasons are many and all utterly compelling. Consider how you store a file at the moment: pop a text file called fred.txt into a directory called C:\worddocs. What do you know about this file? You know it contains text by its TXT extension; you know it's called 'fred'; you know you've put it into that directory. There are a few other important things you know too – like when you created the file from its creation date stamp, and when it was last changed. There are some security properties associated with the file as well, to allow the right people to access its information.

Now assume that this text file is in XML format and that it contains the Schema for something like an invoice. Inside the file you know the invoice number, the number of items, the customer reference number and so forth, all of which are properties of the information content, and the filename fred is just another of these properties, as is the ▶

directory it lives in. Imagine you had a store that reads and consumes that XML file for you, much the way a database manager would do today. Imagine you have no fixed directories in this store either, but that these were just 'stored views' or 'catalogs'. You could view the information in any way you want, and you could spin it around and view it in different ways for different purposes.

Let me give an example. If I knew how to store invoices from the XML Schema, it would be possible to see C:\company name\month\items sold\ and then see all the entries for products sold. So I might see C:\JonsCompany\January\Toothbrushes and then all the line items sold that month. However, you might be interested in the product first and thus have C:\items sold\company name\month\ and so turn this whole view on its head. We'd both be looking at the same data store, but viewing it from different perspectives. Once XML Schema and meta tags are surfaced into the store, this all becomes possible. You can see a very simple implementation of this today by going to an NTFS format store and looking in Explorer at a pile of Office documents. Right-click on the headings and choose some of the other meta tags that can be exposed. Now take this mindset and expand it up to a wholly generalised customer-defined set of schemas.

Will this all arrive with Longhorn? All the indications, plus various nudges and winks and off-the-record chats suggest it might, but it's clear that going for a unified information store is the last remaining piece of the XML puzzle which needs to be fulfilled. Hence, to come full circle, back to my opening prediction. Once we take today's middle-tier and application development capabilities and wrap in Office 2003 as a first-cut version of XML on the desktop, then fortify the rear by changing the storage to a native XML store, the transition to the next computing era will have happened.

Do you grasp just how fantastically exciting this all is? Of course, there'll be many who just don't see the point. These people will happily stay in the current OS/Office world for some years to come, in the same way that many stayed with WordPerfect and Lotus 1-2-3 well into the GUI era. I think Microsoft knows this clearly enough, but also knows that they'll be back in a few years once the dust has settled. Being a pioneer isn't without its bruises, and looking back over my computing career I can think of times when maybe I pushed the boundaries a bit too far. But that's what I was paid to do and so 'je ne regret rien'.

For those of you who shudder at the thought of having to make this XML world work, rest assured that there's still plenty of short and medium-term future for the status quo. Just don't be upset if some of us hitch the horses to the wagons and head west. . .

## OneNote

I've just installed OneNote onto my Compaq Tablet PC, and it's utterly compelling. Such clarity of thinking, such fantastically straightforward problem solving – I'm completely hooked. Go into a meeting, put the Tablet on the table and press the record button. Record the entire meeting and have all of your typings, jottings and scribbles time-stamped. Return to your desk, sync the information to your desktop and main servers and open the file up there.

Click on the little loudspeaker icon next to any item and it plays the sound recording around the time when you made that entry. There's no object model, no macro language, no XML data store (yet). It's a very simple design in this first release, but still a joy to behold, and it comes from the Word group at Microsoft, clearly showing how they're prepared to 'think out of the box' when it comes to new ways of working with information. I hope this doesn't get sidelined by inter-departmental rivalry.

In truth, some child of OneNote ought to become the universal canvas and active surface of your desktop, laptop and PDA in the future.

OneNote – the application that really defines the Tablet era is fantastically straightforward.

## A chair for Windows

I'll admit this sounds a bit silly, but finding a decent office seat is incredibly difficult. The cheap ones seem to be too flat, too hard, too slippery or just plain uncomfortable. That ubiquitous Herman Miller 'Aeron' chair smacks too much of dotcom madness. Years ago, Recaro, the company famous for its car seats for road and race vehicles, made a ferociously expensive office seat called the IdealSeat C, which consisted of a top-of-the-line Recaro car seat mounted onto an office base. I didn't buy one then, pleading poverty, but I've regretted it ever since. Good posture isn't optional if you spend hours in front of a computer.

So you can imagine my delight that Recaro is making them again, and you can order direct from www.recarodirect.com. I chose the fabric model called Filum and it's fantastic – supportive, comfortable and holds me in place as I swerve around the keyboard at high speed trying to get overdue articles written (sorry, Mr Editor!). Treat yourself, your back will love you forever. ■

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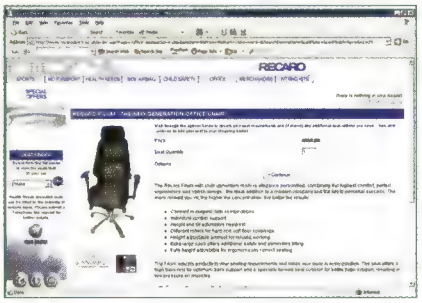


**JON HONEYBALL**
**IT journalist and consultant specialising in both client/server and office automation applications. Emails can be sent to Jon at jhoneyball@pcauthority.com.au**

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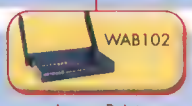


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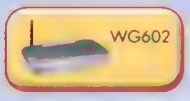


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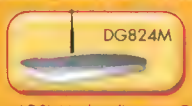


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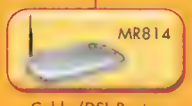


Cable/DSL Router

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# EXTENDING ILLUSTRATOR

Tom Arah looks at the full range of add-ons available for Illustrator 10, and lets us in on some of their features.

The ability to extend Adobe Photoshop's functionality through the use of plug-ins is well recognised and most designers will have at least a couple of third-party filter sets in their armoury. Adobe Illustrator offers similar extensibility, but its vector-based plug-ins are hardly known, with none of the brand recognition of KPT or Eye Candy 4000. I decided to find out what's out there by trying ten Illustrator 10-compatible add-ons.

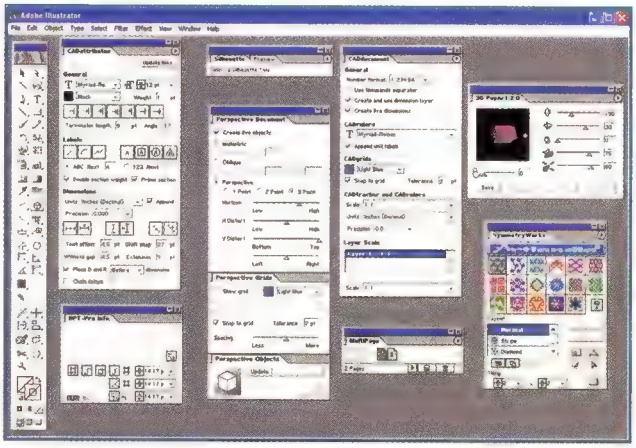
Illustrator extensions don't have to break the bank. Visit the Sapphire Innovations site (www.sapphire-innovations.com) and you'll find a host of filters, brushes and shapes, all the work of Andrew Buckle.

The range is impressive, but the downside is you can easily feel lost. Dig a little, however, and you'll find Andrew's 11 sets of Illustrator add-ons, costing from just AUD$20 up to AUD$100. Finding out what they all do is more difficult, as some have broad themes, while others are mixed bags. Bewilderment might continue even after you've installed your add-ons – Andrew clearly prefers to spend his time on developing new functions rather than documentation or streamlining.

Take the very handy Symbol Paint tool (volume eight), which paints with symbol instances – its dialog lets you adjust no less than 30 parameters. Some of these can be intimidating but are definitely worthwhile. The mysterious Hit Type/Request parameter, for example, allows you to restrict your painting to selected objects or paths. Other hidden gems include the Random Clutter, Random Text and Perspective Grid tools, and at around AUD$150 for the entire collection it would be churlish to complain. Having said that, most users would probably prefer a little less control and a little more usability.

An excellent example of a budget add-on that's both simple and effective is Hot Door's MultiPage (AUD$77 from www.hotdoor.com). This offers a simple floating palette in which you add new pages and select the page on which you want to work. You can print any page selection or export it to PDF using new File menu commands.

Multiple page handling must top most Illustrator users' wish-lists, and you're forced to wonder whether MultiPage is too good to be true – is it just a trick? In a way it is. Behind the scenes, it works its magic simply by treating layers as pages. Whenever you create a new 'page', a new layer is added – with the relevant guide layer acting as master page – and all other layers/pages automatically hidden. This becomes obvious if you add a layer in the Layers palette, because a new page appears in the MultiPage palette too, but if you stick with sublayers you'll be fine. Let's hope Adobe sees sense with Illustrator 11 and finally scraps its artificial and maddening single-page limit. Until then, MultiPage provides an extremely handy workaround.



Plug-ins take Illustrator into a new and sometimes unrecognisable territory.

Equally simple and efficient is Vertigo's 3D PopArt 2 add-on ($110 – from www.vertigo3d.com), which transforms any selected path into a shaded 3D object. Again, it's a simple floating palette that lets you define the extrusion depth, rotate your object in X, Y and Z dimensions and set a lighting angle. As you change settings, a small preview cube is updated correspondingly; when you hit Apply, the effect is applied to the current path. It's nowhere near state-of-the-art compared with CorelDRAW's and FreeHand MX's extrusion capabilities, but it's all you'll need to produce the occasional 3D shape or heading.

## High-end products

The add-ons so far all fall into the category of occasional one-off use – with prices to match – but other developers are targeting niche markets with more advanced and professional functionality. For example, Artlandia SymmetryWorks 2 (AUD$260 – from www.artlandia.com) is aimed at users for whom pattern making is a central part of their work. Its basic principle is simple: select a path or paths, click on any of the 17 coloured icons in the SymmetryWorks palette, and multiple copies of your object(s) are rotated, glided and reflected to produce a symmetric pattern.

The beauty of this system is that patterns remain live so you can keep adding X or Y tiles to fill the space required. More importantly, you're able to edit the original 'seed' pattern, for example, by resizing, repositioning, recolouring or adding a new element, and the overall pattern gets updated. You may also add editable cloned 'replicas' of your seed and save these, together with the transformations that you apply to them, as 'layouts'. Working in this way, it's possible to control step and sliding effects, gradations and so on and produce virtually any kind of repeating pattern. There are lots of power features for advanced users, but I wish Artlandia also offered a cut-down 'lite' version, as its basic symmetry effects offer plenty of creative power.

Another important niche is the production of perspective drawings. The simplest and most powerful solution is Perspective, again from Brendon Cheves and the developers at Hot Door (AUD$285 – from www.hotdoor.com). ▶

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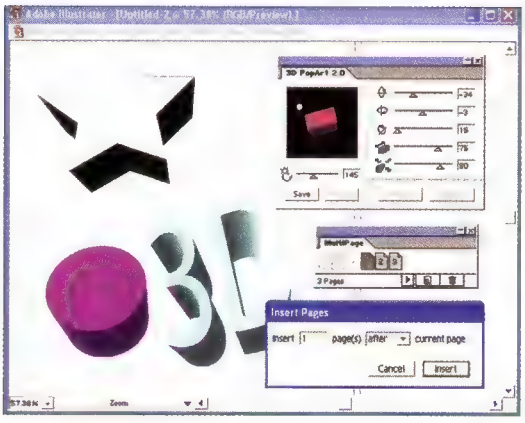
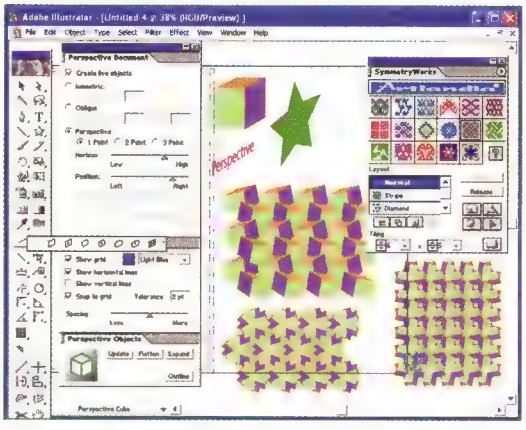



MultiPage and PopArt 3D are simple but effective.



The SymmetryWorks and Perspective plug-ins are high-end solutions.

It comes as several dedicated drawing tools, including the most obvious cube and cylinder options, plus three palettes.

In the first palette, Perspective Document, you choose the type of dimensional drawing you want to produce from isometric, oblique and perspective options. In the second, Perspective Grid, you define the spacing and colour of your grid. The third palette, Perspective Objects, is most impressive, showing a small thumbnail of a cube. By selecting one of its faces and then hitting the Update command, you can automatically project your currently selected object(s) onto the appropriate plane, creating a true perspective image at a stroke. Most impressive of all, this artwork remains in perspective and live, so if you change the grid settings – say, from isometric to oblique, or back to head-on for editing – the artwork automatically updates.

Hot Door also has a solution for producing technical drawings. CADtools 2.1 (AUD$315 – from www.hotdoor.com) isn't as eye-catching as Perspective, but it offers four comprehensive setup and control palettes and a range of 38 drawing and dimensioning tools. Highlights include automatic callouts with dimension and label styles, numeric input and control, customisable document scales, and scaled move, transform and repeat capabilities.

One of the most common tasks for Illustrator users is tracing scanned bitmaps to produce truly scalable and pin-sharp vectorised versions, for example, if you're involved in exhibitions or producing large-format signs. This is where LogoSpruce (AUD$315 – from www.comnet-network.co.jp/eng) comes in, offering a range of tools for tracing imported bitmaps. I expected these to offer automatic image tracing, but that's not what LogoSpruce is about; for example, the Line Trace tool is designed to let you, wait for it, draw straight lines!

After my initial horror, I gradually came to appreciate what LogoSpruce does. To start with, there's a whole range of tools to assist the manual tracing process, including adding one-click guides and the automatic straightening of imported bitmaps. The tracing tools themselves include a number of useful and innovative options like adding perfectly smooth curves at a tangent to the current line. Even LogoSpruce's line tool is far more powerful than Illustrator's own, as it automatically identifies endpoints, midpoints and tangent lines, lets you swap between tool variations and zoom in and out on your image using keyboard shortcuts. Finally, there's another set of tools designed to correct your artwork, including a Trim tool that automatically deletes a line back to the nearest intersection. All told, LogoSpruce offers a comprehensive and well-thought through range of functions for reproducing raster artwork as clean vectors.

If you'd still prefer a tool that does the work for you, there's another plug-in that fits the bill. The Silhouette plug-in (AUD$244 – from www.silhouetteonline.com) is built on the same tracing engine as the well-respected standalone Silhouette application (only available for the Mac). Select the new Vectorize Raster Image tool and use the Silhouette palette to set tolerances, choose black-and-white or colour and, if the latter, whether you want to trap coloured objects so they overlap slightly. Once you've chosen your settings, click on the bitmap and a second or so later the vectorised version appears automatically.

The problem with such automatic tracing solutions, as LogoSpruce has realised, is that it can take longer to clean up the results than to reproduce the artwork from scratch. Silhouette comes into its own here with a range of dedicated correction tools for automatically aligning control points, sharpening corners and smoothing and simplifying paths. The Silhouette palette even offers a large Preview window where you can see what effect your tool settings will have before you apply them.

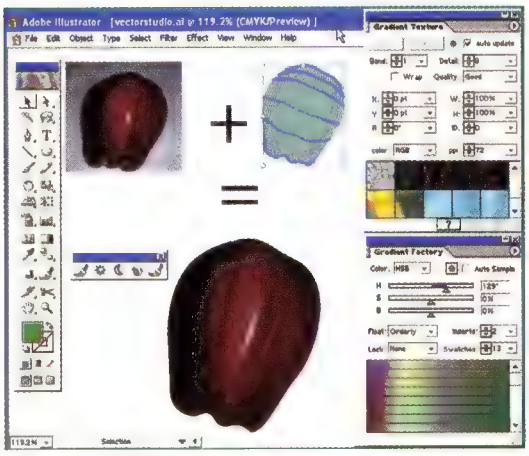
## Standalone?

Silhouette's unique combination of automatic tracing and dedicated correction is impressive, but you have to ask yourself whether you wouldn't be better off with a standalone solution such as Adobe Streamline. The same could be asked of other professional plug-ins aimed at niche markets. For perspective work, wouldn't you be better off using Macromedia FreeHand? For CAD, wouldn't you be better off with Corel DESIGNER? There's certainly a lot of sense in asking the question, and if you're not already an Illustrator user, the answer is a definite yes.

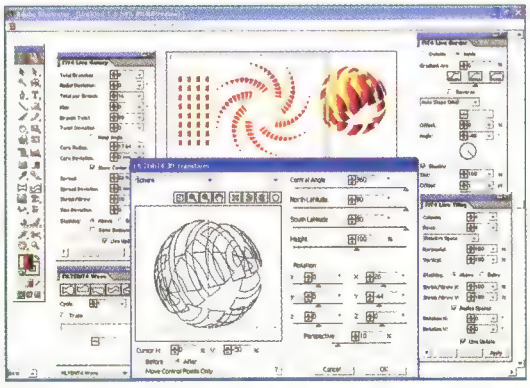
If you are an existing user, though, there are plenty of advantages to adding the extra power right there in your preferred drawing environment (and one which offers such power, creativity and integration). And while these plug-in developers might not be household names, I was surprised at just how professional and workable their products are. But in the end, the unbeatable benefit of these small developers is that they know exactly how Illustrator is used in real-world production environments and how to make the most of it.

In between these budget one-off plug-ins and high-end targeted solutions, there lie two standout collections that manage to provide such wide-ranging new functionality and creativity that they are, in effect, third-party upgrades for Illustrator. The first is Vector Studio 2 (AUD$205 – from www.virtualmirror.com). I was a big fan of the first release, which introduced a number of features such as interactive Morph Brushes, Envelope Meshes and the non-destructive application of bitmap filters. Adobe was clearly impressed too, as it bought Virtual Mirror's distortion-based tools and implemented its own envelope and filter handling.

After Illustrator had incorporated the main ▶



Vector Studio 2 pushes back creative boundaries.



FILTERiT4.1 offers the widest range of new tools, commands and effects.

highlights of version 1, version 2 was never going to be quite such a 'must-have', but it's still remarkable. Two palettes for improving Illustrator's existing gradient handling and for adding a whole new style of gradient-based texture have survived from the first release, along with the ability to apply effects as lenses. There are also new tools to improve shape editing and simplify paths, plus the ability to arrange and save palette layouts.

More eye-catching are the new Retouch brushes, which let you change the brightness, hue and saturation of objects and gradient mesh nodes simply by painting over them. Even more powerful and innovative are the new Sampler tools, where you can change an object's colour, transparency and even size, based on sampled object settings, gradients and even imported bitmaps. It takes a while to get your head around just what these Sampler tools are able to do – for example, cloning an imported bitmap as coloured and sized halftone dots – but their creative power is undeniable.

One plug-in collection that I hadn't come across before is FILTERiT4.1 (AUD$205 – from www.cvalley.com). Again, the range and the depth of features on offer stand out. In FILTERiT, these are divided into three main sections: new tools for Illustrator's toolbar, new commands for the Filter menu and new 'live effects' controlled from their own palettes.

Looking at the Wave, Warp, Roughen, Lens, Broom and Craft (pinch and punch effects) tools, it's clear that like Vector Studio FILTERiT also pioneered interactive distortion effects for Illustrator, although now Illustrator offers its own versions their benefit is obviously much reduced. However, FILTERiT has cleverly given its tools a new lease of life with a 'trace' capability that produces multiple copies of the object in between its original and filtered states. Other new tools include AlignPoints options that let you quickly straighten lines and align objects horizontally and vertically, and the Trail tool, which leaves copies of the current object along the path that you drag – useful for Flash animations.

My favourite tool is the MetaBrush, which works rather like Sapphire Innovations' Symbol Paint tool but with any object or objects. Select your objects, then the brush, and begin painting with them. For greater control, you can set the space, size, angle and orientation of the added objects and decide how these settings should vary based on pressure, direction, number of steps and so on.

FILTERiT's two added Filter menu commands show just how much power may be packed into an add-on. The first, Fractalize, adds new path segments to the paths of selected objects, of a shape, number, height and variation that you select. You can apply the same process to the added segments themselves, producing self-similar fractal-style effects. As with many FILTERiT tools, the settings can be saved as presets and the Fractalize command can also be applied non-destructively from the Effects menu.

More powerful still is the 3D Transform filter. By dragging in the preview window, you can rotate an object around the X and Y axes and, by Shift-dragging, around the Z axis. You may also specify a 3D rotation both before and after the transformation is applied. The real power is seen when you select from the 12 types of transformation on offer, each with a host of controls. Whether you're producing a simple perspective change or an eye-catching 3D spiral, the power is all here (the obvious omission being realistic shading).

What gives the FILTERiT collection its final edge is its range of 13 effects, each controlled from its own palette. The effects are broadly split into two categories. The first group – Border, Cutout, Emboss, Neon and Shadow – is concerned with controlling the appearance of the selected object's path and works by duplicating, recolouring, blending and offsetting objects. Such effects are relatively common and Illustrator offers its own shadow and glow effects, but FILTERiT provides greater control and keeps its effects vector-only.

The second range – Circle, Explosion, Frame, Galaxy, Generation, Reflections, Tiling and Trail – is also built around duplicating the selected object, but this time using the duplicates to produce patterns. These effects act almost as the cut-down version of SymmetryWorks I was wishing for earlier, and – as with SymmetryWorks – their great strength is that they remain live so you can always change settings. For example, you could change the offset and shadow of the Border effect's bevel or add copies and change the spread of the Explosion effect.

FILTERiT stands out from the crowd, but in many ways it's typical of all these third-party plug-ins. In particular, its combination of tools, commands and live effects shows the unique benefit that Illustrator offers to its third-party developers – complete integration. By comparison, Photoshop plug-ins seem semi-detached at best.

Having said this, FILTERiT is also typical in that its effects can be demanding to come to grips with and aren't suitable for occasional users. In fact, all these Illustrator plug-ins, with the honourable exceptions of MultiPage and PopArt, tend toward the technical and can be difficult to master. Once you've mastered them, though, each plug-in rewards the effort by seriously boosting productivity and creativity. ■

**TOM ARAH**

**Tom Arah set up his design company in 1987. As well as design work, he now provides training and consultancy. He can be contacted at tarah@pcauthority.com.au**

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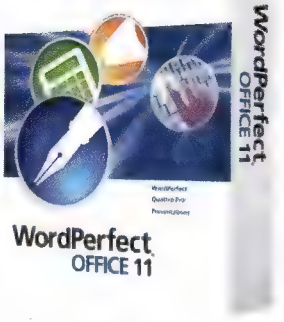


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# A SIGN OF THE TIMES

**Mike MacCana** loads up on hash and examines some suspicious packages.

I've spent a fair amount of time recently training network administrators familiar with Windows to work with Linux. Part of this has meant taking another look at Windows/Linux integration – there's a lot been happening in this area recently, particularly the release of Windows 2003 and the beta releases of Samba 3. By the time you're reading this you'll no doubt know all about the former. Readers of this column should also recall Samba, an Open Source suite of utilities to interoperate with Windows systems. Currently, Samba provides the following:

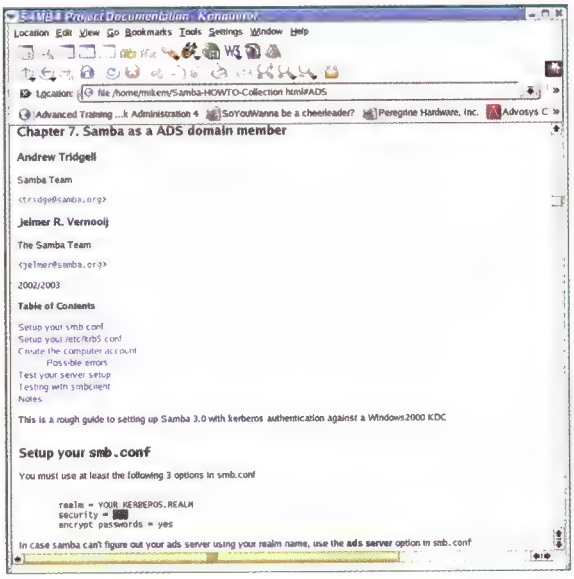
- The ability to share printers and files with Windows' systems
- The ability to mount Windows shares and print to shared printers
- Authentication against Windows domain controllers
- Provide Windows NT4-style Domain Controller support
- WINS name service support for legacy Windows clients
- Support for Windows popup messaging

.... and more.

Samba is reliable and very capable, having served many of my clients for years at a time. Samba 3, which is currently in beta, expands upon those capabilities significantly, using Windows 2000/2003 style methods of doing things that the current version only does in an NT4-like manner. A good deal of that is due to Samba 3's Active Directory support. If you're a Unix guy and have no idea what Active Directory is, rest assured it's nothing to be afraid of – just a collection of the following technologies:

- LDAP (Lightweight Directory Access Protocol) using a particular schema defining the properties necessary and optional for Windows objects – like users, computers, etc – to be stored within the directory.
- A Kerberos-like authentication scheme
- Time-syncing via NTP (Network Time Protocol) to keep clocks in sync between authenticating clients and Kerberos Domain Controllers
- A DNS-based system naming and service location scheme, including SRV records, dynamic DNS, and encrypted zone transfers
- Proprietary Windows RPC to deal with various additional functions.

In my test network I currently have a Linux machine syncing its clock from a Windows 2003 server using NTP, getting a machine account from the 2003 machine using Kerberos, appearing within the Active Directory Users and Groups tab, and authenticating users logging on using Windows domain credentials. There are a few hiccups – Microsoft DFS (Distributed File Server) server support, which abstracts the names client PCs and scripts use to access shares (like //server/share) from the servers where the shares reside, allowing IT staff to move resources without modifying client-side configurations.




The official Samba website provides a comprehensive guide to working with the current Samba 3 beta

When Samba 3 goes stable, you'll hear about it here first (you can pick up packages for Red Hat 9 at www.cyber.com.au/users/mikem in the meantime). But there's a bunch of other new technologies that have come out recently to make adding Linux machines to your Windows network, or vice versa, a much easier task.

## Hash

One of the things I find curious about Samba are the various ways of dealing with the way Windows and Unix store passwords. Neither Windows nor Linux store actual user passwords on disk – if they did someone who breaks into a machine could break into other machines where users used the same passwords.

Instead, operating systems put the users' passwords through a process called a one-way hash to produce a mathematical derivative of that information, called a hashed password. A hashed password is a big sequence of unintelligible gibberish that bears very little resemblance to what you typed in (take a look at your /etc/shadow file to see some).

A given password for any particular user will always produce the same hashed password when run through a one way hash process.

So how does hashing protect the original password? It's very easy to calculate a password hash from the password a user enters, but it takes much, much, much longer to calculate the original password from a hashed version. When a client needs to authenticate, it asks the user for their password, hashes the password, and then sends the hash to the server. The server then compares the hash sent by the client to the hash stored on disk. If they match, ▶

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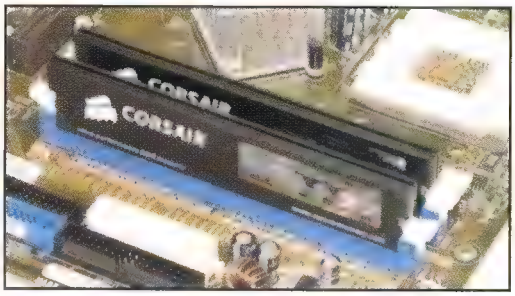


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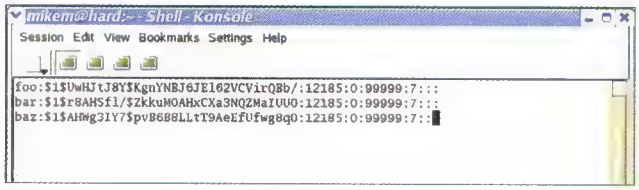



Passwords are stored on disk in hash format – in the /etc/shadow file on a Linux machine or the SAM of a Windows machine's registry.

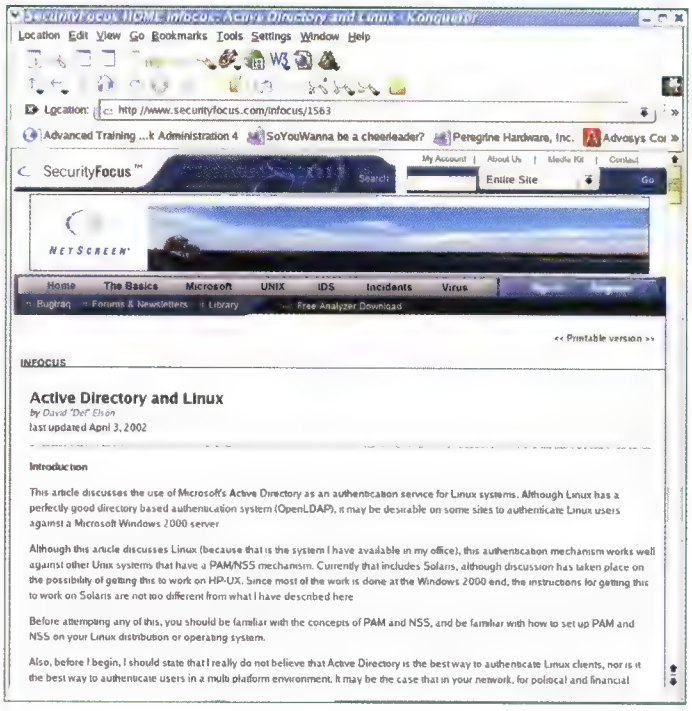
the client gets access.

The problem is that Windows generally uses MD4 format hashes, whereas Linux uses MD5. If you have both operating systems authenticating as they usually do, you'll need to store password hashes in both formats for them to authenticate. Why doesn't Linux use MD4? Well, the people who invented MD4 don't recommend anyone use the format. Windows uses it mainly for legacy reasons, but encrypts the part of the OS where the hashes are stored as a (partial) workaround.

Is the difference between hashing method a hassle? Well, it's certainly something you'll have to deal with when handling authentication between Windows and Linux systems. But there's a stack of different approaches to the problem, and they're all pretty easy to set up. The only thing you'll really need to decide on is whether you'd like your authentication source to be Windows or Linux. You can happily authenticate both kinds of clients against either platform, so feel free to pick which ever you prefer.

## Authenticating Linux machines with Windows servers

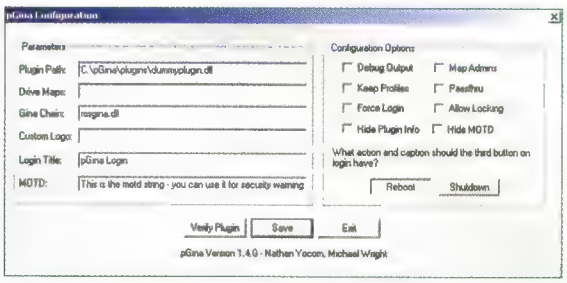
• Use LDAP to authenticate to Active Directory. To do this, you'll need to install a tool like AD4Unix on a Windows 2000 /2003 server. AD4Unix is an Open Source Win32 application that provides the properties necessary for accounts to log into a Unix system (such as a home directory, MD5 hash, etc) in Active Directory. This works in the same way that, say, installing Exchange would add properties for mailbox names to each account.




AD4Unix provides the properties accounts need to log into Unix machines from a Windows 2000 or 2003 server running Active Directory.

• You can authenticate against an existing Windows server using Winbind, which comes as part of Samba. On a Red Hat 9 system, you'd select System Settings | Authentication from your menus and set up your system with a Windows domain name and the address of the PDC. On other distros, just add in the 'winbind' option for each of the files mentioned in /etc/nsswitch.conf, and configure /etc/samba/winbind.conf with the Domain and Domain Controller name. As Windows accounts don't have some of the properties needed to log into a Linux system (such as a shell and home directory), Winbind will take care of providing those settings to your system. After you've started the Winbind service, running 'getent passwd' and 'getent group' will show the virtual password and group files that Winbind has created from the Windows machine, containing your Windows users and groups.

PGina's Windows interface is documented on MSDN with the expectation that third parties will use this to plug in their own authentication systems.

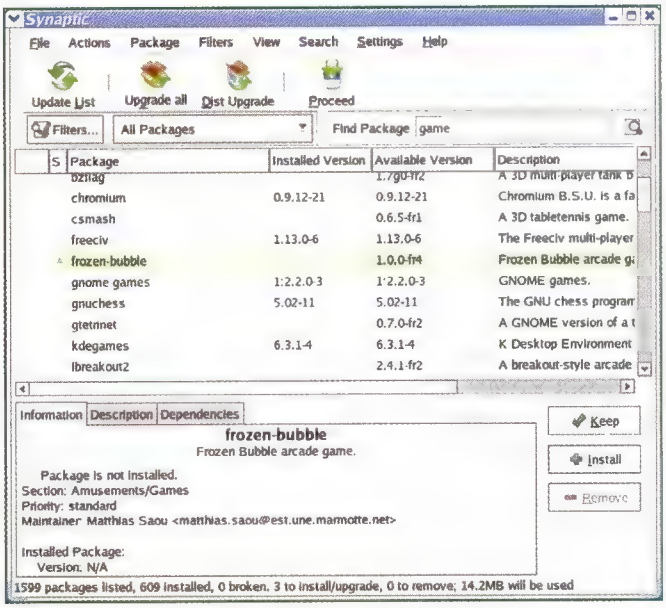



## Authenticating Windows machines with Linux Servers

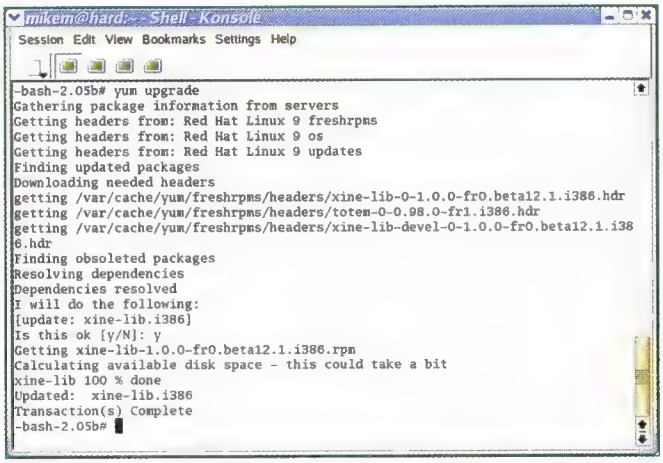
• Use PGina to provide Windows clients with native logon support for (pure, non-Microsoft) LDAP. PGina replaces MSGINA, and allows LDAP and NIS to replace the Windows logon service (the thing you see after pressing <Ctrl+Alt+Delete> on a Windows machine). Sound like a hack? It isn't. The interface PGina uses to talk to Windows is also used by the Windows Netware client, and is documented by Microsoft with the expectation that third parties will make their own authentication systems – in other words, it sits at the top of a pretty solid foundation. I have friends using PGina in medium scale (400+ client PCs) networks and apparently it will handle larger networks as well.

• Set up both MD5 and MD4 encrypted passwords on the Linux server. This could be on the local disk (MD5 hash for Linux clients in /etc/shadow and an MD4 hash for Windows clients provided by Samba in /etc/samba/smbpasswd), in an LDAP directory, or elsewhere. The main disadvantage here is that users will have to re-enter their account details, as the input for one kind of hash can't be recreated by another.

• Make Windows clients use non-encrypted passwords. This was once a common practice, but is now quite unusual. In this case, the passwords are sent in clear text ▶




The APT-based package downloading front-end Synaptic has had a sharp cleanup.




Yum's a simple, fast, and reliable command line updating tool.

## LINKS

**Active Directory client with Samba 3 how to:**
http://samba.org/ftp/unpacked/samba_3_0/docs/htmldocs/ads.html

**AD4Unix**
www.css-solutions.ca/ad4unix

**AD4Unix and LDAP Installation**
www.securityfocus.com/infocus/1563

**PGina**
http://pgina.xpasystems.com/

**Samba 3 Packages for Red Hat 9**
www.cyber.com.users/mikem/samba3

**Technical Overview of Samba 3 Active Directory Services**
http://us1.samba.org/samba/ftp/slides/tridge_ads_cifs2002.pdf

**Using Bind 9 for Windows 2000 DNS**
www.linux-mag.com/2001-03/bind_01.html

**WinBind**
www.samba.org/samba/docs/man/winbind.html

over the network, and the Linux server does the hashing.

Some people think the security effects of this action are negligible – as MD4 encryption already has a variety of known flaws and is no longer regarded as secure by its authors. However, Microsoft no longer tests or supports unencrypted passwords and I still think that even MD4 encryption is still better than clear text. When non-encrypted passwords are passed to Samba, the standard MD5 password hashes are used. You can enable plain text passwords on Windows clients, by applying a registry change from the REG files located in /usr/share/doc/samba(version)/docs/registry.

### APT Dance

I've been getting quite a bit of mail from readers of late. I'm endeavouring to reply to as much of it as I can, but if I'm a little late, be patient. One of the things quite a few people have mentioned is how happy they've found the Advanced Packaging Tool, or APT, which fetches and installs packages and their dependencies. Reader, M Larsen notes 'with the help of the Synaptic GUI, APT makes it all too easy to download and upgrade packages through public repositories. It computes dependencies automatically and makes it easy to install, uninstall, and update all packages on your computer. It's definitely worth the download.' I've mentioned APT here before, but there's been a few developments in this area which readers may be interested in. Firstly, Synaptic had a couple of facelifts, and now has a much simpler, polished, Gnome 2 interface. I've been showing this off to the students in the training course I teach and everyone's been quite impressed with the tool.

However there's another application, Yum, that's recently emerged as a solid contender for installing and updating software on RPM. Yum is highly inspired by up2date and APT, but has a few advantages. Package updating programs like up2date, APT and Yum maintain an index of available packages, which must be updated with any recent releases for them to do their work. However, a tool like APT will fetch new indexes for every package in a particular group if a single new package is added. Not much of a big deal per se, but the size of these indexes gets pretty large, and hence the process can take a while. Yum's a fair bit cleverer – fetching headers only for new packages. Because of this, Yum (like up2date) automatically refreshes its indexes every time you go to install something – but unlike up2date (which also does this), it doesn't take forever. And you can use it to install third-party software, building your own local repository if you wish.

Yum's also a much smaller application than APT – a good thing for most Unix users, who regard smaller apps as more reliable (in the sense that since there's less code, there's less to go wrong). You can fetch Yum packages for Red Hat at www.freshrpms.net. ■

**MIKE MACCANA**
IT consultant for IT services group Cybersource in Melbourne. Linux queries can be sent to Mike at mmaccana@pcauthority.com.au

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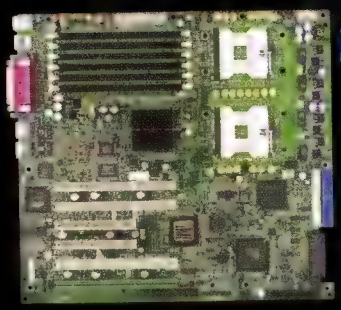

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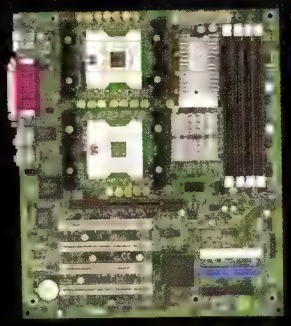

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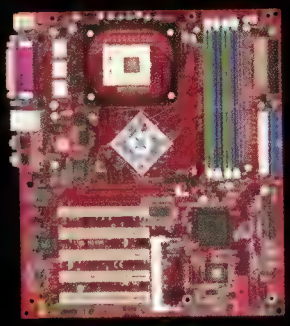

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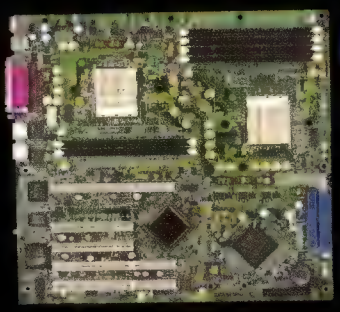

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# AUDIO ON THE HOOF

Today's portable PCs have more computing power than ever. **Brian Heywood** shows how you can use it.

When I was in Melbourne last year doing some recording, my reliable, though aged, Dell Latitude Portable PC got fried by a lightning strike. As Dell wasn't prepared to support such an old machine, I had to get a replacement at fairly short notice and ended up with a Compaq Presario, happily 'on special' in the local computer emporium. While it doesn't have a particularly whizzy spec compared with today's state-of-the-art notebook PCs, it's far more powerful than my old Pentium 133MHz laptop and has a much bigger screen as well.

I used my old portable mainly for office tasks like word processing and collecting my email, but it didn't have enough power to be considered for any kind of serious audio tasks, apart from MIDI sequencing and perhaps a bit of simple WAV file editing. This was as much due to its dearth of hard disk space (800MB) as to its relatively modest processing power. I did use it on a number of gigs to drive a Yamaha MU-10 MIDI module, basically to provide backing tracks for an occasional electro-acoustic duo act I did with cellist Saskia Tomkins.

However, MIDI is a far more compact way of representing music than a digital audio wave file, which uses up 10.5MB per stereo minute. Given that my steam-powered portable PC never had more than about 100MB of disk space going spare, this would have allowed the grand total of ten minutes total WAV recording capacity.

A multitrack recording system based around a Compaq Presario notebook, a FireWire interface box and a Mackie CR-1604 mixer.

The front and back panels of the Nuendo Multiset show the wealth of connection options available.

Now, I have a powerful PC with over 3GB of available hard disk space, and that's after all the music applications have been installed. You might think I've got the core of a nice little portable multitrack recording system, but sadly it isn't as simple as that.

## Expand the mind

One of the great advantages of a normal desktop or tower PC is that it's easily expandable. Simply drop a specialised PCI interface card into one of its internal slots and you can convert your mundane business PC into anything you fancy. In my (or rather my PC's) case, I've rehabilitated a number of older machines this way to perform useful tasks in the studio.

However, as you'll know, when it comes to portable PCs this useful expandability isn't nearly as easily available due to the physical constraints of the packaging. This means you have far fewer options when it comes to using a portable PC for anything other than normal business applications.

A fundamental problem is that the audio hardware fitted in most portables is usually pretty dire – typically a basic chipset integrated onto the motherboard. The connection options are also limited, because connector space is at a premium on the cramped rear panel of your average notebook PC. For instance, my Presario 1200 only has a microphone input and a headphone output. The upshot is that you will need to buy some dedicated audio hardware add-ons if you want to approach anything near serious music-making on your notebook.

Unlike with a desktop PC, you won't have access to the large number of reasonably priced PCI audio interfaces that have become available over the years. It's a real shame because the PCI bus is ideal for high-performance audio, as it can handle very high data rates. These cards are just too large to fit inside the confined spaces of a notebook interior. All is not lost, though – there are options available that plug into PCMCIA/CardBus slots (these days called PC card for added confusion), USB and FireWire ports. Both PC card/CardBus and USB ports are pretty common on notebooks, with FireWire increasing in popularity recently, especially on more expensive systems (and Apple iBooks).

I'd rule out USB for audio. While the data throughput of the USB bus in its fast mode (12Mb/s) is high enough to handle multichannel audio, both the latency and the fact that the audio device has to compete with other USB devices for bandwidth mean that it would be difficult to ensure good ▶

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The CardBus interface provides a way to connect your portable PC to the real world.

results using this type of interface. 'Latency' in this context refers to the interval between the time some realtime event actually occurs – in this case, the sound you're trying to record – and when the computer detects that event. With audio data, delays much above 5ms are noticeable and can seriously affect the usability of the system.

Using a CardBus interface looks far more promising, since it has a much more direct route to the underlying PC hardware. CardBus is a 32-bit data bus, which is a development from the 16-bit PCMCIA interface standard. PCMCIA stood for Personal Computer Memory Card International Association and was originally designed as a convenient way to add memory to portable computing devices. However, it didn't take long for developers to realise that it could be used for more general interfacing tasks. When the specification was upgraded to 32-bit, CardBus' designers took this interest into account and enabled it to handle data rates up to 132MB/s and offer similar facilities to the standard PCI bus.

The final option is the FireWire interface. The latest version can handle data transfer rates up to a maximum of 400MB/s while still retaining the ease of connection that you get with a USB system. The standard was originally developed by Apple, but has been taken up by other manufacturers such as Sony (which calls it i.LINK) for transferring digital video between systems, and it has been adopted by the IEEE.

Once this interface becomes almost universal, there should be a big market in interfaces that will bring down the price of peripherals considerably. To take advantage of the higher data rates, your notebook PC needs to have FireWire integrated into the motherboard.

## BACK TO BASICS: BALANCED/UNBALANCED SIGNALS

If you take apart your average guitar or keyboard audio connector, you'll find a single conductor and a braided or twisted shield wire. If you dissect your hi-fi's cables, you'll see these are the same. However, if you disassemble a microphone three-pin XLR connector, you'll find two conductors and a shield. So why the difference?

In short, guitars, keyboards and sound systems usually employ 'unbalanced' cables, while microphones usually use a 'balanced' connection scheme. Microphones generate a much lower signal level than those other types of equipment and thus are more prone to picking up interference from radio transmissions (RFI) or from the magnetic fields associated with power cables (hum). This problem is caused by the fact that you need to have much higher gain (that is, amplification) on a microphone channel to get a decent signal level, but this bigger gain will also bring up any unwanted signals – such as AM radio or a passing taxi.

The solution to the problem is to have two parallel conductors that carry the electrical signal in antiphase. The preamps at the receiving end of the signal effectively invert one of these two signals to reconstitute the original waveform, as you'd expect to see in a WAV editor. This inversion also gets applied to any interference on the antiphase signal wire, so that it now cancels itself out since the noise signal is identical on both wires. Is that simple or what?

In live situations, the line-level signals – which operate at much higher levels – don't use this scheme (so are unbalanced). However, in the studio where the electric noise pickup has to be kept to a minimum, often the line-level signals also use balanced cables to ensure the highest possible quality in spite of the additional cost of cables, connectors and patchbays.

### Nuendo Multiset interface

I've been using Steinberg's Audiolink 96 Multiset interface, designed to augment the firm's Nuendo integrated multimedia production environment, which has a CardBus interface. This hardware is basically a rebadged RME product and can be used with any software that works with either Windows or Steinberg's ASIO interface standards. In terms of physical connections, the unit provides eight analog audio inputs and outputs – balanced or unbalanced – along with an additional eight inputs/outputs via ADAT Optical Links, plus S/PDIF, word clock, ADAT synchronisation and MIDI-in and out connectors.

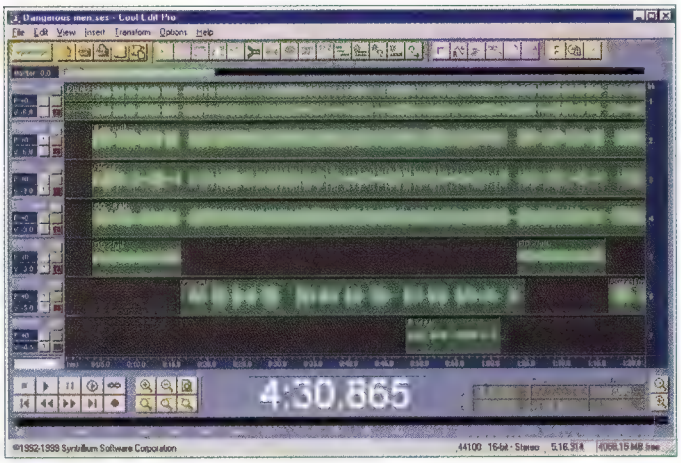
If you want to delve a little deeper, the Multiset is equipped with 24-bit converters, with sample rates up to 96kHz – it's bang up to date with regard to audio quality. The whole package fits inside a small but robust box (45 x 215 x 120mm), which is essentially a half-width, 1U rack unit. It has a number of power supply options, with an external mains power supply plus cables for connecting the unit to a car cigarette lighter or 12V rechargeable battery. RME says that it thought of powering the unit via the CardBus interface but that its power requirements were beyond the interface specification. To be honest, this isn't the sort of device that you'd operate in environments without some form of auxiliary power being available.

The Multiset connects to the Nuendo CardBus interface via a high-speed serial cable, which turns out to be FireWire compatible. This means that if my portable gets fried by lightning again, I'll be able to plug the interface directly into the replacement PC, as FireWire should be fitted as standard by that time.

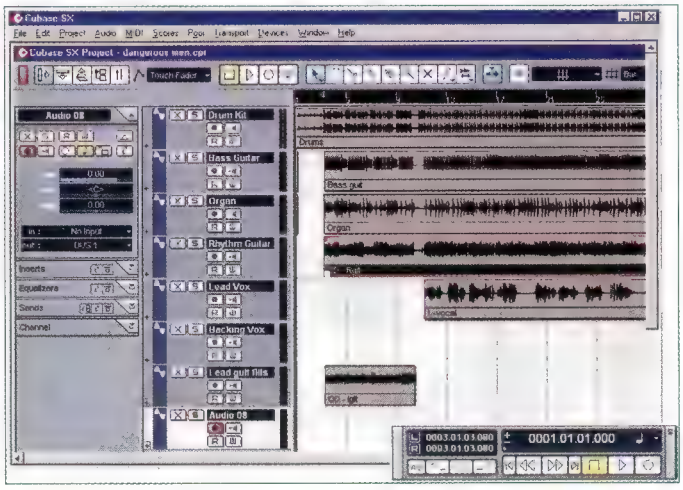
It also raises the interesting prospect of equipping a studio PC with the PCI Audiolink 96 interface so you could share this module between studio and location recording tasks.

### System configuration

Multiset's eight line-level inputs and outputs are accessible via 1/4in jack plugs, which ▶




Cool Edit Pro provides a simple 'what you see is what you get' interface.



Cubase SX needed more power than the Compaq could provide.

can be used in either balanced or unbalanced mode – its audio circuitry automatically detects the type of connection and compensates accordingly. Having only line-level inputs and outputs means you'll have to use the interface with a mixing desk of some kind, especially if you need equalisation or level-control features.

I could quite easily dedicate this whole column to the various options for going about and doing this, but to be brief, unless you have a mixing desk designed for multitrack recording, the easiest option is to use either the direct channel outputs or the channel insert points to tap into the individual audio signals before they get mixed down to stereo.

On the Mackie CR-1604 mixing desk I use for live work, I can simply use the insert points on the first eight channels to do this.

Obviously, the thing to remember is that the quality of the mixer will have a major impact on the quality of the recorded sound, however, as long as the desk is electrically quiet, you should be able to get good results.

The Mackie CR-1604 – for all its other shortcomings – gives a very 'clean' sound, which makes it a good choice for this kind of application. The Multiset also provides a good set of interface-level options on internal jumpers, allowing you to match its input and output signal levels with the mixer.

## Software issues

To be able to use this kind of hardware, your audio application needs to have two important features. The first is that it should be able to playback audio in some kind of multitrack mode. This is equivalent to the 'arrange' window common in sequencers like Cakewalk or Cubase and allows you to display and record the new audio alongside existing tracks. The other requirement is that the software has to be able to simultaneously record multiple tracks, which should be true of all but the most basic of audio packages.

Although the Multiset is obviously packaged to augment Steinberg's Nuendo software, there's nothing to stop you using the device with any software that can recognise and use multiple audio inputs. As I don't have a copy of Nuendo, I've been using the Multiset with Cool Edit Pro in its multitrack mode, and I also had a brief excursion into using it with Cubase SX. Despite it being an older version of the software, I found that Cool Edit Pro worked well, giving an intuitive recording session feel, simply by selecting the desired input channels and then putting them into record mode.

Cubase SX was also simple to set up, but it obviously needs a more highly specified PC than I have, since it wouldn't reliably record four simultaneous tracks without losing data. This difference in performance may be related to the fact that Cool Edit was originally written for the PC, whereas Cubase has been ported from the Apple Mac. I plan to see how SAWStudio and Cakewalk's Sonar behave, as they're both dedicated PC packages.

## Tips & tricks

One useful trick when using a digital delay in a mix-down session is to select a delay time that's related to the tempo of the track that you're recording. This technique can add 'punch' to the track and prevents the delay from making the mix muddy. This is because it tends to reinforce the rhythmic elements rather than competing with them. While it's not a particularly onerous task to calculate the required delay, I've just come across a little freeware utility called Delay Calculator on the Steinberg support Website.

Written by Ian Price, this useful little program lets you enter the tempo, the note type (crotchet, quaver, minim and so on) and then displays the time delay that this implies. You can even select a triplet time. The entire program has a file size of just 340KB and so won't take long to download, even if you're using a modem. Just pop it on your desktop and fire it up whenever you need to work out a delay.

You can download the application from the Steinberg FTP Server at ftp://ftp.steinberg.net/download/pc/dtc/DELAYC_1.EXE ■

**BRIAN HEYWOOD**
**Professional musician, composer and audio producer, Brian uses PCs in his recording studio, and is the author of *PC Music Handbook*. Contact him at bheywood@pcauthority.com.au**

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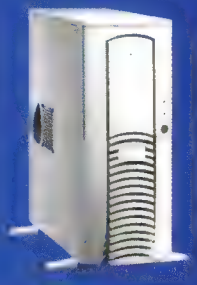

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EVERYTHING CONNECTED

# EMAIL MARKETING OR SPAM TACTICS?

**Jane Dudman and David Hellaby reveal the factors threatening the potential of email marketing.**

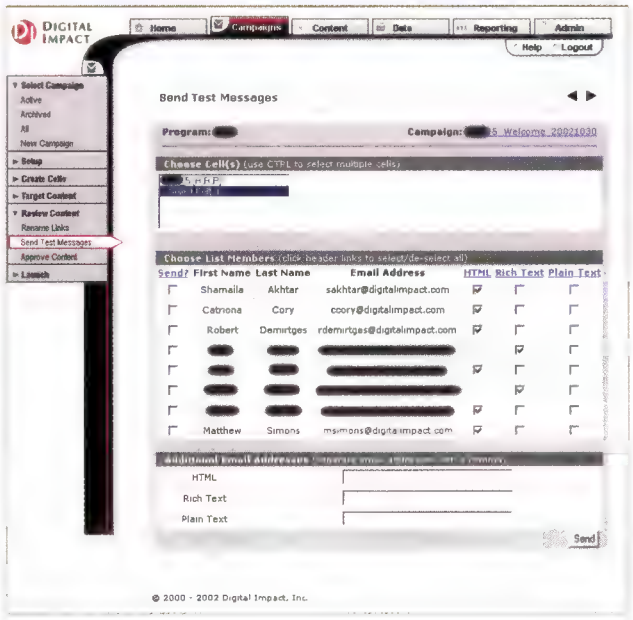
In an online environment growing more hostile to spam each day, the advocates of email as a marketing tool have to tread a fine line. Initial enthusiasm about the benefits of email marketing has started to shift towards a more realistic assessment of this addition to a marketing team's armoury. At the same time, consumers are growing increasingly irate about what they see as annoying intrusions into their inboxes, and they're being supported by legislators in the US, UK and Europe, and now Australia.

Given this backdrop, it's increasingly important to get the facts and figures about email marketing right. You must ensure your marketing team knows exactly what it can and can't achieve as part of an overall marketing plan. That way, you may be able to avoid some of the obvious pitfalls along the way.

The advantages of email marketing are considerable. It's cheap to produce and deliver, although true cost-effectiveness has to be carefully assessed. It also has a huge potential reach, and it can be personalised to get certain marketing messages over to specific groups of potential buyers.

However, there are many downsides. It's crucial with email marketing to consider the desired end result. Often, emails are used to drive potential consumers to a Website, but the reason for this may not be to get them to buy products or services online; sometimes it's enough just to push up site traffic. Whatever the aim, it has to be clearly defined and the end result carefully measured, otherwise email marketing really is skirting close to spam.

One of the big debates is whether consumers should be able to opt out of email marketing or have to opt in by giving explicit permission. In Australia the National Privacy Principles defined in the Privacy Act have been interpreted as requiring consumers to 'opt in'. Although the principles have yet to be tested in court, the CAUBE (Coalition Against Bulk Unsolicited Email) says that, in simple terms, the principles state that if you collect information from a person, and it is reasonable for you to ask permission to use personal information for marketing at the time of collection, then you may not use that information for marketing unless you have obtained permission. Most notably, a vendor who spams email addresses collected via a Web page and did not ask for permission on that Web page will be in violation of the new law, even if they offer an 'opt-out' option in the spams. According to CAUBE, 'While you may be tempted to think this interpretation of the new law is a radical one, the Privacy Commissioner has given the same interpretation.' Soon, new EU laws could make opting in the only legal option in Europe, a decision which would be welcomed by anti-spam groups such as EuroCAUCE. It estimates that if only one percent of the EU's 18.4 million businesses decided to operate opt-out email marketing, you could employ somebody full-time for a whole year doing nothing else but issuing remove requests.




The appropriate format can be chosen for email clients, in this case for HP's online campaign.

International concerns have grown so high that guidelines on how to use email marketing efficiently without abusing the email system have become freely available. CAUBE (www.caube.org.au/business), which has worked with several Australian government organisations in helping formulate laws and regulations covering spam, provides comprehensive information for businesses wanting to direct market over the Internet.

It's not just getting branded as a spammer that concerns those wanting to use email marketing effectively. Email marketing may seem easy, but it's still at an early stage of development compared with the many years that have been put into direct marketing by conventional mail, and several aspects need fine-tuning.

Getting email marketing right is a complex combination of technology, marketing, keeping on the right side of the law and, above all, gaining the right kinds of responses you want from customers.

## Everybody's doing it

The perceived cheapness of email marketing is certainly a major attraction.

Companies of all sizes love the idea of being able to get out a message quickly and cheaply to potential consumers, or to their trading partners and suppliers.

Small companies have been particularly quick to take advantage. According to a recent report by the Direct Marketing Association on the use of email in the US, smaller companies allocate the highest percentage of their marketing budget, 21.4%, to email marketing, compared with large US companies, which spend 13.7% of their total marketing budget ▶

on email.

The figures being bandied about seem to bear out the cost-effective nature of email marketing. In the US, HP has been running an email-based campaign for its printer buyers for some time. It claims this is mainly because it was costing too much to support customers via telephone calls into its support centre. An email costs between three cents and eight cents, whereas a phone call can cost up to US$15 ($24.20), according to HP, which estimates it's saving US$150,000 ($241,936) every month in shifting support calls over to product support emails. Again using US figures, HP also claims direct mail costs US$163 ($263) per lead and email costs just US$7 ($11.30) per lead. That makes email 27 times more effective than direct mail, for HP at least.

But not everyone is getting carried away. Monica Horten, Director at B2B marketing specialist Pragnetix (www.pragnetix.com), cautions that when all the real costs of email marketing are taken into account, a different picture can emerge. 'There's a lot of upfront investment in setting up an email marketing campaign. Firms have to get their databases in order and sometimes that can be a showstopper, because they don't realise they have all this upfront work before they can do anything. It's still not as expensive as direct mail, but it's more than companies expect. It's not free.'

Avoiding the taint of spam is a major challenge and the legal framework in Australia is being tightened. While the Privacy Act requires organisations to adopt a code of practice embracing 10 national privacy principles as to how personal information is gathered and used, the National Office of the Information Economy (NOIE) has recommended specific legislation banning the sending of commercial email without prior consent unless there is an existing customer-business relationship.

The Federal Government has announced plans to adopt NOIE's recommendations, contained in its recently released national report on spam and go ahead with the legislation – a move opposed by the Australian Direct Marketing Association, which says legislation won't work because so much spam is sourced from overseas.

One of the weekly email newsletters sent out by First Direct in conjunction with The Motley Fool.

But just as important is the problem of email marketing being perceived, if not quite as spam, then certainly as an irritant. This is something of which all reputable email marketing people are aware. It doesn't deter them, but they are careful to emphasise the framework within which they work. The ADMA's Code of Practice makes it compulsory for its members to allow recipients of marketing material to 'opt out'. However, according to the CAUBE the most important aspect is to ensure consumers have given their permission to receive unsolicited marketing material by email – that is, they must have opted in.

Those who wish to avoid spam could use the Direct Marketing Association's (DMA) voluntary scheme called the eMail Preference Service. For an annual fee, businesses get their email mailing lists cleaned up against the DMA's central database of people who've said they don't want to receive marketing material by email. Australian consumers can add their details to this international database (www.dmaconsumers.org/consumers/optoutform_emps. shtml) to opt out of receiving commercial emails from any DMA members worldwide. It is compulsory for Australian DMA members to remove any names on the database from their e-mailing lists. The main problem with this approach, though, is that it's only used by those

## THE LEGAL FRAMEWORK

The main law in relation to email marketing is the Privacy Act 1988, which imposes general requirements on companies about how they collect and use personal information. The key requirements are that personal information must be used only for the purpose for which it was collected and that all companies with an annual turn over of $3 million or more must adopt a code of practice that encompasses the 10 national privacy principles (some privacy you will see down in the Act).

The Privacy Act's coverage of email is yet to be tested in court. While both the Privacy Commissioner and CAUBE believe that it enforces a compulsory 'opt in' situation in respect to commercial email unless there is a specific established consumer-business relationship, the NOIE's report on spam calls doubt as to whether it covers small business spammers and says it has yet to be tested if an email address is considered personal information.

The Trade Practices Act 1974 is an effective tool against commercial email/spam that contains scams, misleading header information, embedded programs, links to misleading websites and spoiling of the originating email addresses. It has been used on numerous occasions by the Australian Competition and Consumer Commission to clamp down on businesses and individuals who were using email for nefarious purposes.

In rare cases the Criminal Code Act 1995 could be used against both email which endangers network viability.

In future the Federal Government has indicated it will introduce legislation based on the NOIE's recommendations. That includes a compulsory 'opt in' clause where there is no existing customer-business relationship. It would also require all commercial email to contain accurate details of the sender's name, physical and electronic addresses and require ISPs to make spam filtering options and products available to their customers.

The NOIE also wants to see the creation of a new offence of using a carriage service to commit any Commonwealth offence and a review of the Privacy Act to ensure that it properly covers spam.

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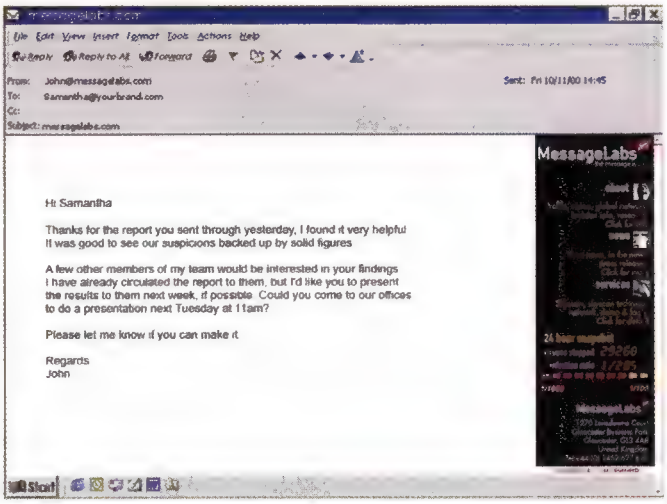
companies registered with the DMA.

'In my opinion, spam is in the eye of the recipient,' comments Adam Dean, account manager at online agency 1000heads (www.1000heads.com). 'If someone thinks an email is spam, then it is spam, even if it's not technically spam. The problem is that we could be sending information to people who've forgotten that when they registered for a competition for which they agreed to receive emails. We usually make it clear at the top of the email why it's being sent, because people need reminding.'

Getting a good, clean mailing list can be very difficult, even for large companies with extensive internal customer databases. It becomes even trickier for small companies. Site Intelligence is a small Website metrics company that has used email marketing to attract potential customers to a series of seminars.

'Part of the puzzle was identifying a target group when we were sending out the email promotions,' explains John Woods, Chief Executive at Site Intelligence. 'We needed a third-party list because there weren't enough contacts in our own database, but we wanted one that had been gathered ethically and that fitted our brief in terms of targeting decision markets. We knew what content we wanted, but we needed it to be written attractively.'

Site Intelligence's response rates show the difference between using well-honed internal lists and buying in a list. From its own customer database, the response rate was between 5 and 10%, while the response rate from the third-party list was just 1 to 2% – comparable with traditional direct mailshots.




A sample email showing the MessageLabs branding, which a company can substitute for its own branding.

As well as lowering response rates, buying third-party lists can be expensive. 'Cheap is a relative term,' points out Andrew Davies, head of e-marketing at online and telephone bank, First Direct, 'Email marketing is cheaper than direct mail, but if we're buying a list of non-customers, we have to buy big lists and that's where the cost-effectiveness can be challenged.'

Like other companies, First Direct has found considerable differences in the response rates to its email campaigns. When the bank launched an independent financial advice arm, it had an integrated campaign that included an email shot in conjunction with online investment firm The Motley Fool. 'Over the first six months, 50,000 people signed up for our weekly newsletter, which we've now been sending out for about 18 months,' says Davies. 'We believe the real success has been the success of both brands. If it were just First Direct, I think people would wonder how much a bank could tell its customers.'

The weekly email newsletter has open rates of up to 65% and click-through rates of about 25%. 'The more creative we've been, the better the response,' says Davies. One lesson learned by First Direct is that customers buy more from a Website than in direct response to email, so the bank's email shots now mainly focus on driving customers across to its Website.

Finding out what works and what doesn't in an email marketing campaign is still something of a new art, but lessons are emerging. 'It's an evolving environment,' says Site Intelligence's Woods. 'We've experimented with varying trivial things, most obviously the subject line, and that can cause a variation of up to a factor of ten in response, even if the content is identical.'

One example is the promotional email ▶

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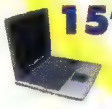


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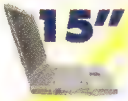


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The CAUBE site has a ton of information for businesses on the do's and don'ts of email marketing.

sent out by Site Intelligence, where the content was the same, but some emails had 'Executive Briefing Invitation' as the subject and others had 'Website Performance Measurement'.

'We tried both, because we didn't know which would work,' says Woods. 'We had twice the response rate from the Website performance subject line as we did to executive briefing. There's no single right answer. Firms have to find out which way to best use the limited real estate involved in email.

## Which format?

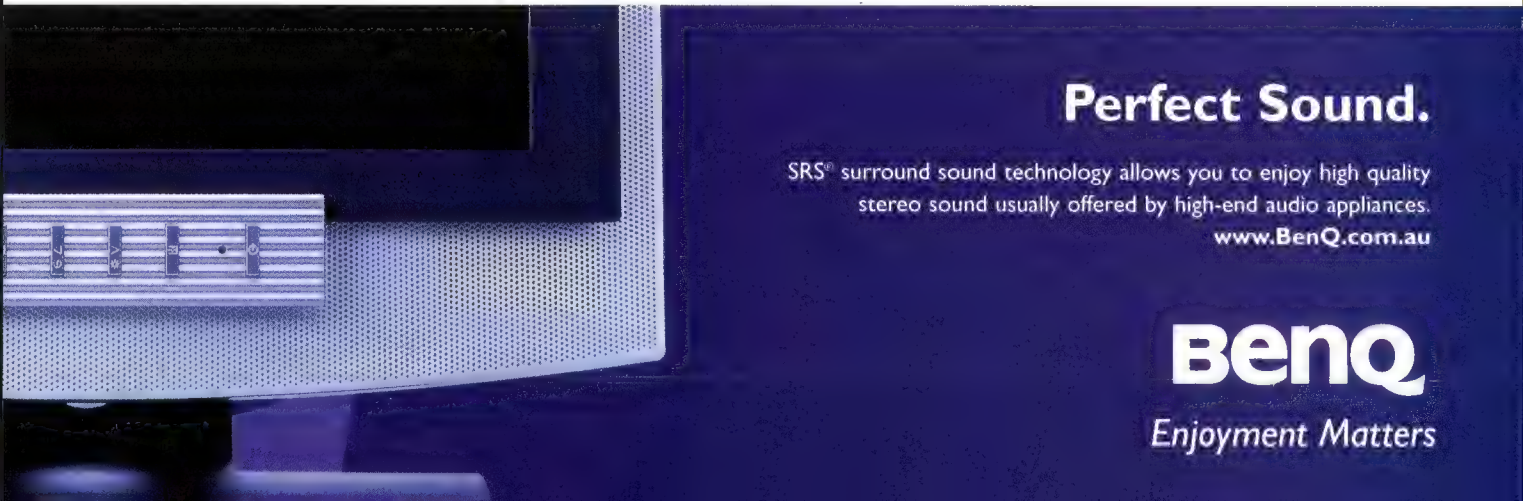
Formatting is another big factor. The designers of promotional emails swear by HTML rather than just text, not only because of the design aspect but because it allows closer tracking of whether the emails have been read. But to be viewed as they're intended, HTML formats need to be readable by the email client. 'The programs we're developing can tell whether an email client accepts HTML and can automatically send the right format,' comments Dean at 1000heads. But there's one exception to this rule: Outlook 97. 'Outlook 97 is an email marketer's nightmare,' he says. 'It's one of the few pitfalls we can't get round. We always send text if Outlook 97 is the client.'

Monitoring response rates to emails has become increasingly sophisticated over the past couple of years. 'We can now track so much more,' says Dean. The main tools for tracking replies and click-throughs include creating a specific landing page on a Website for each link, using certain click-through tracking software, or using log-analysis software. In HTML format, images are embedded in the email and are pulled from the server when each email is opened.

It's one thing to monitor responses, including bounce backs and unsubscribe requests, but some companies need more definite proof of response rates. In Australia the Circulation Audit Board, a sister organisation to the Audited Bureau of Circulation, which audits newspaper and magazine circulations, now offers a third party verification of Website traffic data. The CAB report verifies the volume of page impressions sent from the Website over a defined time period. All reported data is measured using the Australian approved standard definitions and does not contain activity generated by robots, frame activity or unrequested pages. It also reports unique hosts, users, visits, sessions and others.

The CAB and the ABC have been working with media industry bodies such as the Australian Association of National Advertisers, Advertising Federation of Australia, Australian Direct Marketing Association, Internet Industry Association, Media Federation of Australia, major Web publishers, measurement

## EMAIL CERTIFICATION



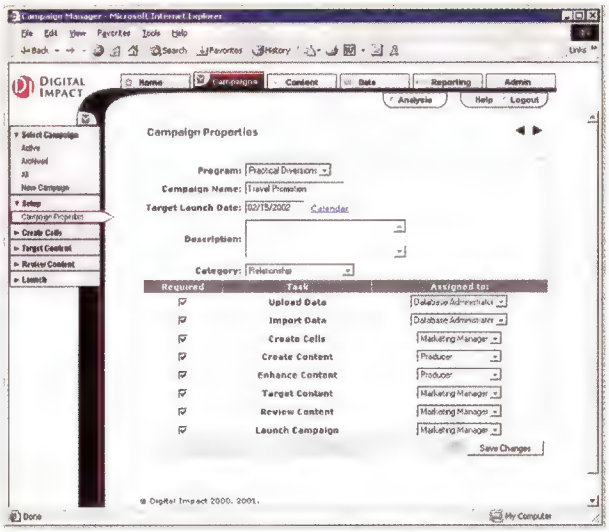
companies and others to develop a set of Australian industry accepted standard measurement definitions based on the standard definitions already used in more than 30 countries.

CAB also offers an email audit that verifies the total average net delivery of emails per issue sent over a defined period. The audit verifies and reports the average number of emails sent, less any excluded distribution such as failed addresses and enables publishers to show the volume/percentage of requested or subscription only copies delivered, as well as full demographic profiling where information can be verified.

As well as certification, there's a growing demand for branding. MessageLabs (www.messagelabs.com) has developed a 'watermark' system to allow firms to brand their emails with company images and logos. 'At the moment, companies are sending out thousands of emails completely unbranded,' says Mark Sunner, Chief Technology Officer at MessageLabs. According to Sunner 'They wouldn't dream of sending out company letters on plain paper. We think this will be a huge market.'

Woods at Site Intelligence emphasises that flexibility needs to be built in.

His company sent out promotional emails about a series of seminars, the date of one of which had to be changed because of a public scheduled transport strike. 'We were able, at short notice, to remail everyone,' he comments. 'That was important, as we didn't necessarily have everyone's phone number. It's not difficult, but it's important to have flexibility.' Inflexibility is particularly noticeable among some of the larger firms now getting online and using email.




A sample email showing the MessageLabs branding, which a company can substitute for its own branding.

British Airways, for instance, is unable to cope with responses to its ticket confirmation emails (see *How not to do it*).

Other companies use email-filtering systems to ensure that when they send out mass emails only genuine queries get back. Digital Impact is one such company that filters email responses. 'We have a sophisticated database that sweeps an email and looks for keywords,' explains Nick McConnell, of Digital Impact.

The company filters up to 95% of all email responses, including unsubscribe requests, and forwards on the remaining 5% to its client.

'By screening out the garbage, it allows our customers to respond to genuine emails more quickly,' says McConnell. 'It's an important aspect of email marketing, because people expect email to be a two-way dialogue.'

## The disclaimer

There are lots of ways in which email marketing has the potential to foul up. If a golf shoe firm rents a list of 200,000 names for an email shot and only 1,000 of those people are interested in golf shoes, it's succeeded in irking 190,000 people, points out Jeff Barnes, from email marketing specialist Bluestreak, which has been running a big email-based campaign for Reebok.

Barnes, perhaps not surprisingly, doesn't think the answer is to blame the medium, just as consumers don't blame the poor postman for junk mail.

'Take it up with the people who sent it,' he comments. 'They haven't researched their market properly or they haven't sent what the consumer asked for. But properly done, email marketing is a powerful tool.'

At the same time, the technology in use is getting smarter.

One thing we'll see more of is embedded Java executables within email messages, so animation can be used without creating huge overheads in the size of the email itself (such as those found when using animated images).

There will be more viral marketing, with messages passed on between users, either through incentives or because of the message content. To date, charities have been the main beneficiaries of viral marketing, because people appear not to mind passing on what they see as a worthwhile message.

It's a hard fact to ignore; the puzzle for the marketing people is how to turn that goodwill into a marketing tool for commercial products and services.

As email marketing continues to develop and spread, and businesses discover the advantages, it's hoped we'll see more carefully targeted email shots. Research firm Forrester forecasts that spending on email marketing will reach US$6.8 billion ($10.97 billion) by 2006.

One thing's for sure: email marketing is here to stay.

## HOW WE RATE AS SPAMMERS

Much of the opposition to Australia's proposed anti-spam legislation is based on the claim that most spam originates from overseas and is therefore not covered by Australian law. However, according to CAUBE Australia is a major contributor to the global spam problem.

A 1999/2000 survey by the Australian-based Coalition Against Unsolicited Bulk Email (CAUBE) estimated that Australia accounted for about 16% of all spam that is sent globally.

While CAUBE says this percentage may have decreased significantly in recent years as the volume of spam from other regions, such as Asia and Eastern Europe, has increased, the total volume emanating from Australia has not.

According to the NOIE's report Western Europe was not regarded by any Australian ISP as being the primary source of spam, possibly because of relatively strong European privacy laws which are currently being reinforced through the EU directive requiring a qualified opt-in for commercial email.

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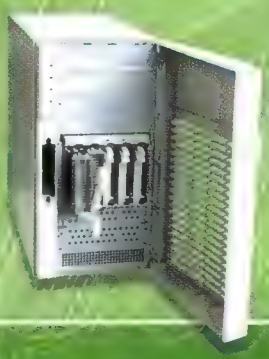

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# QUESTIONS & ANSWERS

**David Moss** contemplates hibernation after resolving a few PDF woes. But first, some questions.

## HIBERNATION

**Q My laptop doesn't seem to have a hibernation mode. Can I enable this, and is it safe to do so on a FAT32 disk? I'm running Windows XP.**
**K Remm**

A Under Windows XP, support for the hibernation mode is fully built into the operating system. In the past, it was supported by a combination of the hardware of the machine and the BIOS, you usually had to have a hibernation partition set up on the hard disk.

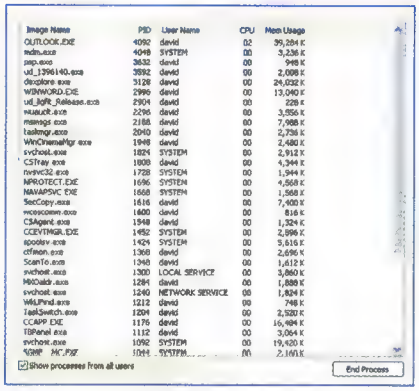
With Windows XP, just go to Control Panel | Power Options. Go to the Hibernation tab and make sure it's enabled, then go to the Advanced tab and decide what actions will take place when you either close the lid, press the power button or the sleep button. You may or may not have all three of these combo boxes, depending on your laptop's design. On each one you can choose from 'Ask me what to do', 'Standby', 'Hibernate' or 'Shutdown'. The Hibernate option only appears if you've enabled Hibernate in the Hibernate tab.

As for the disk formats supported, you have no worries, as Windows XP supports hibernation to FAT32 and NTFS, so it doesn't matter which one you have.

## TINY FEET

**Q A while back, I clicked on something when I was in Task Manager and now the menu at the top has disappeared. When I want to exit, I now have to press Esc. What should I do?**
**A Singh**

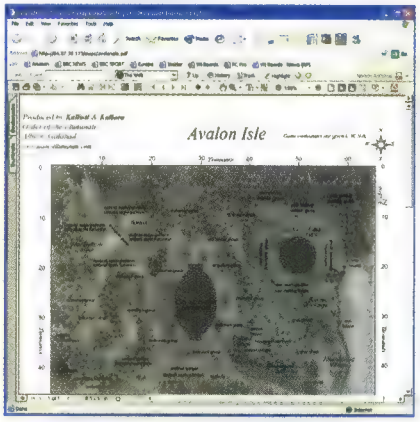
A You double clicked in the blank space to the right of the tabs, which switches Task Manager to Tiny Footprint mode. To reverse the process, simply double click on what is now the top border of the window. Alternatively, go to Start | Run, type taskmgr.exe in the Edit window and see how much fun you can have trying to select <Ctrl+Alt+Shift> before hitting the Enter key. That will run Task Manager and restore it to its former glory.



Here's Task Manager running in Tiny Footprint mode.

## EMBEDDED PDF?

**Q Is it possible to embed a PDF file in a Webpage for display?**
**K Inners**




View Adobe PDF files with Acrobat Reader embedded in Internet Explorer.

A Not as far as I know. You'll have to create a link to the file on the Webpage and, when people click on it, the page will be loaded into Internet Explorer hosting Adobe Acrobat Reader.

This, of course, won't happen if a user clicks on the link doesn't have Reader installed, so it's good practice to create a link to Adobe's site from your page so that people can go there and download the program if required. You'll find small buttons on this page that link to all Adobe downloads: www.adobe.com/support/downloads/main.html.

Grab the Reader button and place it somewhere on your Webpage, linking it to the same page as Adobe uses, and people will easily be able to get Reader if they need it.

The URL that Adobe was using as the link from the button at the time of writing was www.adobe.com/products/acrobat/readstep.html.

## MP3 ANXIETY

**Q Is it legal to download and play MP3 files on my system?**
**I Masters**

A The simple answer is, yes. There's no problem with doing so, as long as those MP3 files have been placed there by, or with the permission of, their legal owners. Thus, downloading MP3 files from, say, an artist's official Website where they've made the files available for free download isn't a problem.

However, downloading music from a site that has simply ripped the tracks off a CD (or similar source) and made them available for download, and clearly has no intention of paying royalties to the artists, isn't legal – it's tantamount to receiving stolen property.

So make sure the source of the MP3s is legal before you start downloading music to your system or an MP3 player.

## PDF INTO WORD

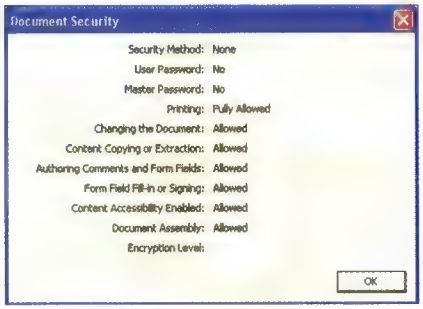
**Q Is it possible to take data from an Adobe PDF file and place it into a Word document? Can the whole file be converted?**
**H Piel**

A There may well be third-party applets that can do this, but Word doesn't convert Acrobat PDF files by default. Depending on the level of document security set by the author of the document, you might be able to copy text and capture graphics from a PDF document and paste them into Word.

To find out what the security settings are, go to the File menu in Acrobat Reader and select Document Security, or just press <Ctrl+Alt+S>.

The Document Security dialog will appear and you'll be able to see at a glance just what you can and can't do with the document you've loaded. Assuming you do have the permissions to do it, copy an entire PDF file into Word by heading to the View menu and ensuring Continuous is selected and then pressing <Ctrl+A> (Select All). You can then use Copy and Paste to move all the selected items into Word. Be aware that this might not be a seamless transfer, as you may well lose formatting, fonts and so on, so what you eventually see in Word could look very different to what you saw in the PDF file when it was opened in Acrobat Reader.

The Document Security dialog will tell you what you can and can't do with Adobe PDF files while you have them loaded in Acrobat Reader.




## READ ONLY?

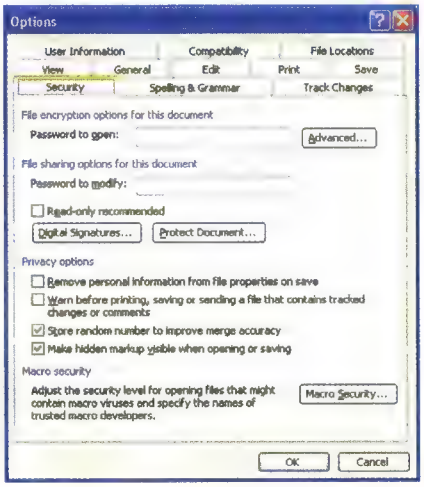
**Q Is there a way of making a Word document read-only?**
**G Minn**

A Yes, you can make a Word document carry a 'recommended read-only' tag, or you can make it completely read-only by setting a password and not supplying it to people who are going to receive the document.

In the former case, you enable the 'Read-only recommended' checkbox on the Security tab of the Word Options dialog, accessible via Tools | Options. Now, whenever a user opens the document, they'll get a dialog suggesting it would be best to open the document in read-only format – any changes they make will then have to be saved under a different filename. Alternatively, by setting a password and not supplying it, the user will have to go for the read-only option on the Password dialog.

Another option you might like to consider is to place the documents in the Shared Documents folder on your system. The Shared Documents folder grants Full Control privilege to anyone with administrative privileges, but all others can only browse the Shared Documents folder (and any subfolders) and read the contents.

Use Word security to control who can do what to a Word document.




## XP BOOT DISK

**Q Could you explain how to create a bootable floppy disk for a Windows XP system?**
**M Klear**

A I could, but I think you'd be better served by reading the excellent Microsoft Knowledge Base article (305595) on the subject, as it deals with how to create the disk and what to do if you encounter problems after creation. The article can be found at http://support.microsoft.com/default.aspx?scid=kb;en-gb;305595.

## DIRECT CABLE

**Q Why can't I use a COM port to make a connection to another Windows XP system? I'm trying to create a Direct Cable connection, and I was under the impression that this could be done in this manner.**
**Does it really have to be done using network cards?**
**T Milliner**

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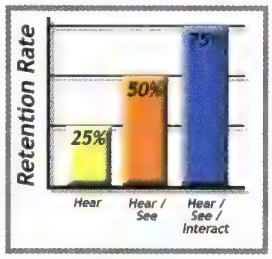


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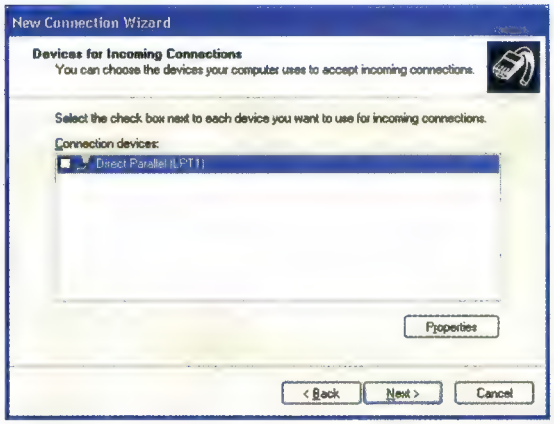
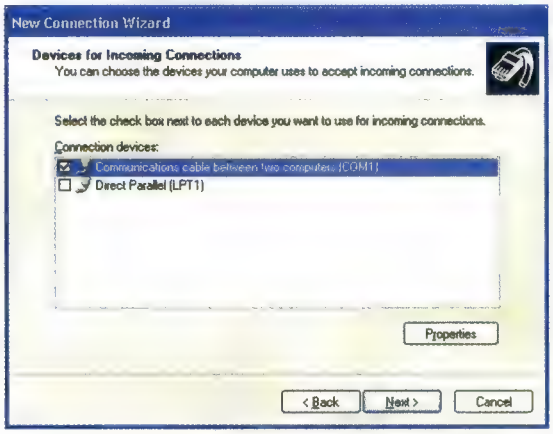



At the moment, you don't see a COM port connection.




and now you do. The default is that you don't, so creating a Direct Cable connection via COM ports requires you to do some Wizard work.

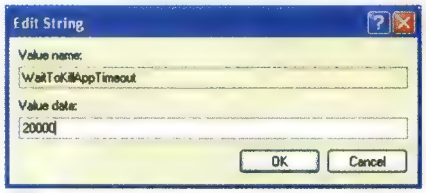
**A** You're correct, a Direct Cable connection can be set up using the COM ports, but first you're going to have to create a new connection. Open Control Panel, click on the Network and Internet Connection icon and then on Network Connections (go straight there if you're using Classic View). Look under the Common Tasks pane on the left-hand side and select Create a New connection, click on Next and then select the 'Set up an advanced connection' option and click on Next. Select the 'Connect directly to another computer' option and, depending on whether you're the host or the client who wants to connect to a host, select the appropriate option on the next page.

The next page will provide you with a drop-down combo box and it's here you can select the COM port that you wish to employ. Complete the Wizard by choosing the users you want to be able to connect to the system and click on Finish. You have now created a connection that uses a COM port, so return to the Network Connections page and once again opt to create a new connection.

This time, select 'Accept incoming connections' instead of 'Connect directly to another computer' and you'll see that your new COM port connection option has been added to the default LPT connection option.

## SLOW SHUTDOWN

**Q Is there any way to change the amount of time Windows XP takes to shut down? I seem to get a lot of dialogs asking me if I want to shut down a running process now, or wait a while, when I try to shut down my system. A friend told me he'd seen systems where the timeout value had been changed and that problem had gone away, but he didn't know how it had been done.**
**R Kastleman**



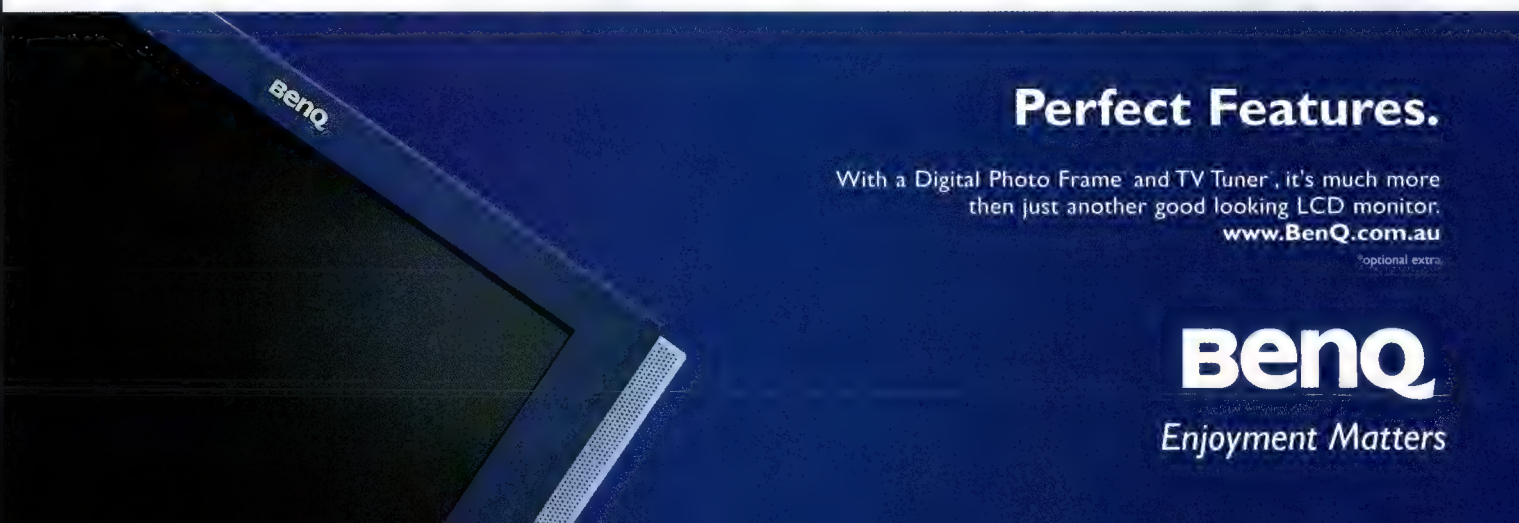

Modify the application timeout value for Windows XP if you're getting problems with apps at shutdown.

**A** This is a registry job, so create a System Restore Point in case of problems. From Start | Help and Support Center, click on the 'Undo changes to your system with System Restore' link, select 'Create a restore point', hit the Next button and follow the instructions. With that out of the way, launch regedit from Start | Run and look for the following key:

HKEY_CURRENT_USER\Control Panel\Desktop.

You're now looking for the WaitToKillAppTimeout entry under Desktop. Double click on this entry to edit it and you'll see it's set to '20000' – this is 20 seconds expressed in milliseconds, and any change you make must also be in milliseconds. There's little point in making it too long, otherwise you'll be waiting even longer than you were before for the same dialogs to appear, assuming they were popping up because of problems on your system as opposed to sluggishness in the closedown department.

My experience is that Windows Explorer is usually the culprit, and I generally tell it to try once and, if there's no joy, zap it ▶



How to prevent yet another pesky Wizard from running.

with the End Task button.

If you're seeing a lot of these dialogs and it isn't Windows Explorer at fault, you may have a problem that you're not going to solve by simply changing default timeout values. You'll need to be looking in a different (system configuration, loaded programs) area for a solution.

## STOP MSC CONSOLE RESIZING AFTER CHANGES

If you're like me, you'll find yourself perusing the contents of the Windows XP Computer Management MSC console on a daily basis. And you might be just as frustrated as I used to be at its unwillingness to remain the size and shape to which you set it before closing it down. I can, however, offer you a fine solution to this problem. Right click on the Start button, select Explore and then navigate to the Windows\System32 folder. Locate the compmgmt.msc file, right click on it and select the Author menu item. The Computer Management MSC will load, and you can resize it as you desire. When you close it, you'll get a dialog box asking you if you want to save the console settings. Shout 'Yeeesss!', punch the air with delight and click on Yes. You may now act in a superior manner towards your fellow cubicle occupiers for the rest of the year.

## KILL THE WIZARD!

**Q** Can I stop the Wizard that tells me I ought to clean up my Desktop and get rid of unused icons? It doesn't run that often, but I'm trying to reduce the number of pop-up windows that appear on my Desktop, as these can cause some games to crash.
**T Yamm**

**A** This is an easy one, fortunately, and for once it doesn't require a trip to the registry. Right click on the Desktop, select Properties and then click on the Desktop tab when the Display Properties dialog opens.

Click on the Customize Desktop button and you'll see at the bottom of the General tab a checkbox labelled 'Run Desktop Cleanup Wizard every 60 days'. Uncheck it to prevent the Wizard from running. As you can see, there's a 'Clean Desktop Now' button there, so you can do this task manually whenever you wish.

The clean-up operation doesn't get rid of the icons, it simply takes them off the Desktop and stores them in a folder that you can access via a new Desktop shortcut, which it presumably won't try to hide (even if you never look in the folder via the icon it just created).

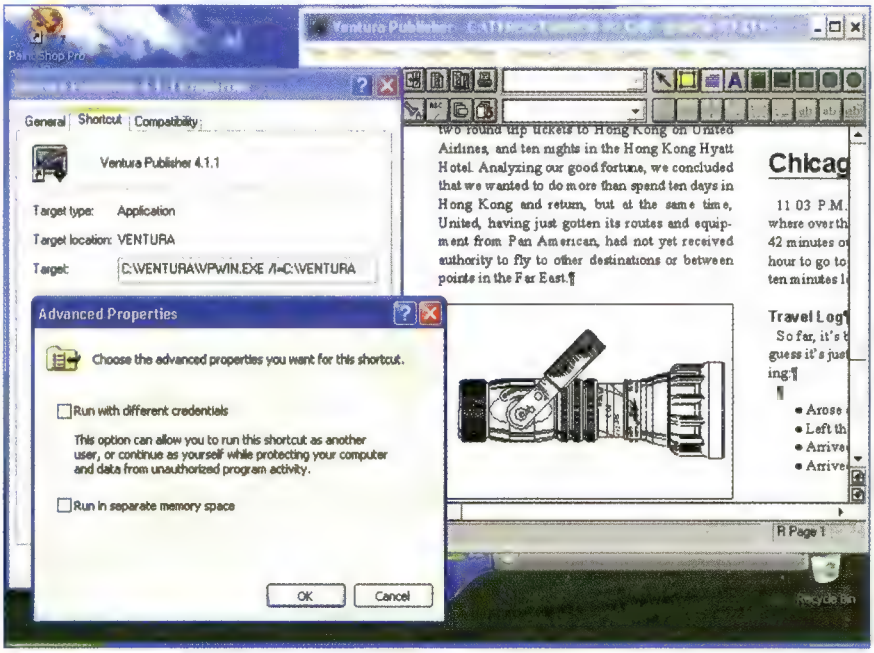
## GOLDEN OLDIES

**Q** I have some programs I used to run in Windows 3.1 and Windows for Workgroups. Will they work in Windows XP? I haven't needed them until now, but they offer functionality I could do with using and I don't want to have to buy expensive modern equivalents if it isn't necessary.
**R Gale**

**A** Most Windows 3.x applications will run quite happily under Windows XP, but there are a couple of things worth keeping in mind. First, by default, Windows XP will run all 16-bit applications in the same virtual machine. If you're going to run more than one at a time, consider setting each one to run in its own memory space – otherwise when one crashes it will usually take the others with it. After installation, right click on the executable for the application and click on the Advanced button in the Shortcut tab. This will bring up the Advanced Properties dialog, and you can tell Windows to run it independently by enabling the checkbox labelled 'Run in separate memory space'.

Other issues that spring to mind with Windows 3.x applications are that they

Many Windows 3.x applications will run quite happily under Windows XP. Here, Ventura Publisher 4.1.1 struts its stuff.



won't understand long filenames, and I suggest you stick to running applications as opposed to low-level utilities that might have had a propensity to interact heavily with the Windows subsystems. If an application requires 16-bit device drivers, it won't work as far as I know, as Windows XP has no support for any sort of 16-bit device drivers. While we're on the subject of Windows 3.x, as a reminder for anyone who might have forgotten, Program Manager is alive and well even under Windows XP. Just do a Start | Run, type 'progman' and hit Enter to get back into a world of groups and group items.

## LOST INFRARED

**Q I've upgraded my system to XP and now find I can't transfer data using an infrared connection – something that worked just fine an hour ago. Infrared seems to be active, so what's the problem?**
**M Frattle**

A For infrared data transfer to take place between two devices, the Windows XP Workstation Service must be active.

This service is enabled by default if your system has a network adaptor, as it's a vitally important service for network connectivity. However, if your system doesn't have a network card, the service won't have been started. To start it and re-enable your infrared data transfer, do the following.

Click on Start | Run, type compmgmt.msc and hit Enter. Expand the Services and Applications tree, and click on its Services item.

Scroll down until you locate the Workstation Service, double click on the entry and make sure the Startup Type on the General tab of the Workstation Properties dialog is set to Automatic.

You should be able to start the service from the same tab.

After this is done, you'll find that your infrared data transfer attempts will be marked with the same degree of success that they used to enjoy. Hopefully, they'll stay that way.

## ANNOYING DRIVER

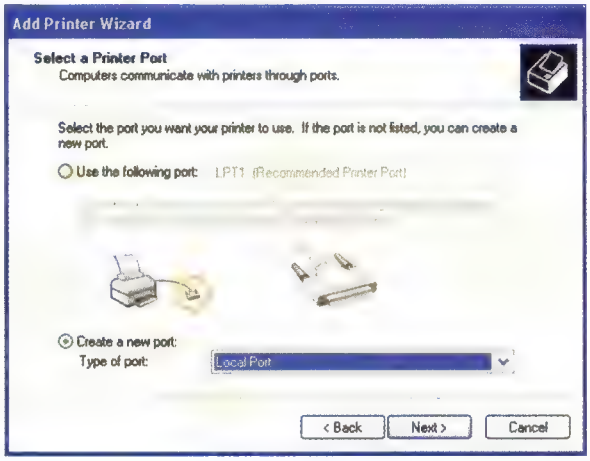
**Q Is there a way to avoid having to upgrade a printer driver on a number of workstations every time we get a new driver for the printer?**
**H Francis**

A All you need do is install the driver locally using the method below:

1. Click your way to Start | Control Panel | Printers and Other Hardware | Printers and Faxes.
2. Opt to add a new printer, click on Next, select Local Printer, clear the checkbox labelled 'Automatically detect and install' and click on Next again to procced.
3. The Port Name dialog will now appear. Type the path to the printer in this format: \\server\printer – substituting the name of the server and the name of the printer where appropriate.
4. Continue through with the rest of the Wizard, selecting a printer driver along the way, and eventually click on Finish.

Now, whenever the driver is updated on the server, it will be automatically updated on the workstations as well – saving you the trouble of doing the rounds. ■

Set up a printer locally to ensure automatic driver upgrades from the server where the real printer can actually be found.




## PING THAT PATH

How many times have you used ping and tracert to help you solve network problems? I'd just like to point out that under Windows XP you can use pathping instead, a command-line tool like the others that effectively combines both ping and tracert into one utility. After running a standard tracert, pathping then pings the routers it encountered on the tracert exercise for a period of time and returns you statistical data based on that. This is extremely handy when you are trying to track down a network problem and are unsure which router, or routers, might be the source of the trouble.

# DIGGING FOR DATA

The untimely destruction of your data doesn't necessarily mean that all is lost. **Ashton Mills** shows you how to bring it back from the dead.

Data recovery is a mystical and varied art that shares much with archaeology. Depending on where you dig for data you may or may not find what you are looking for, and the longer you leave going after your lost data the greater the chance it will be worn away by age and reduced to fragments of its former self.

Unlike archaeology, however, sifting through the desiccated bits of your hard drive's past can be easily done from the comfort of your study and with just a few simple tools.

But first it helps to understand the nature of data loss and the different levels of data recovery so you can choose the right tool for the job.

## Your computer has been lying to you

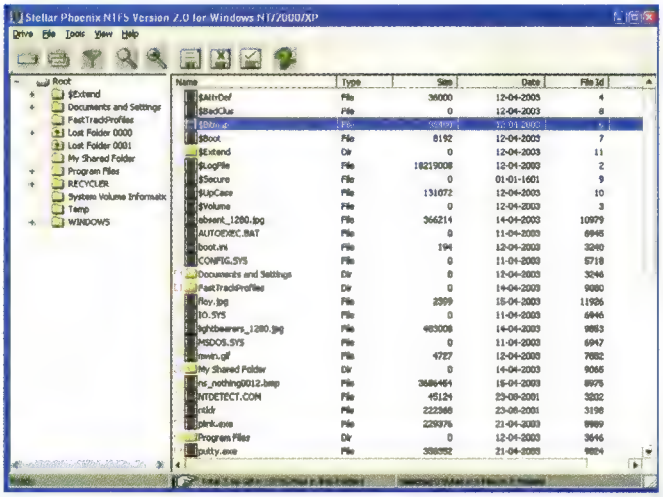
When you delete a file on your hard drive the file itself isn't erased, only its *record* is.

If you read last month's piece on file systems (*issue 67, page 127*) you'll remember that all file systems use an index of some sort to store information about files and directories, including size and location on disk. This allows searching for the location of a file to be very quick, not to mention making the maintenance of even vast file systems a simple affair.

In the interests of performance it makes sense, then, that when a file is to be deleted all you really need to do is delete its entry from the index. To the end user, the file is no more. In reality, the magnetic bits and bytes that represent the file are still present on the disk, and can still be accessed and read.

The simplest form of data recovery, undeletion, involves scanning the filesystem's index, and sometimes the disk itself, for files and directories that still exist on the drive. Recovery is just a matter of re-creating an entry to refer to the space used by the file, although to be safe and keep the integrity of your file system most undelete programs will force you to copy the file to a separate device or partition.

The effectiveness of this technique depends greatly on how much time has passed since a file was deleted and a recovery operation was initiated. With a file's entry in the index gone, it's free to be replaced by another. Additionally, and more importantly, the disk space the file occupies is now free to be written over with new files. Some programs are able to resurrect information about a file, but the data actually recovered from the disk may be partly incomplete and mixed with information from other files. The longer you leave it, the greater is the chance of this happening.




Recovering undeleted files can be a simple point and click affair.

This is why the Windows Recycle Bin lets you allocate a set amount of disk space for file undeletion – it quite literally it backs the file up into the Recycle Bin, a complete copy, because this is the only guaranteed way to recover a deleted file regardless of how much the drive is in use. In reality, it never gets deleted, just *moved* to the Recycle Bin. And, in case you're wondering, when this happens the file itself is not moved from one location on disk to another, its entry in the index is merely changed to reflect a new location in the file system hierarchy.

Sometimes basic undeletion can't recover lost information, and more advanced forms of recovery are required. These can involve scanning drives for recognisable file headers (for example all Word docs identify themselves as such) irrespective of what the index says, undoing formatted partitions (again the success depends on if the drive has since been reused), reconstructing boot table entries, recovering data from bad sectors, and repairing incorrect partition information. Frankly, there's an awful lot that can go wrong in the fragile realm of magnetic storage, but thankfully the most any of us have to deal with is the loss of an accidentally deleted file. For this there are a range of tools available that support all the popular filesystems including, of course, FAT16/32, NTFS and even ext2/3 under Linux.

## Software solutions

If you think you don't have a need for data recovery software keep in mind there are other causes of data loss aside from user error. Viruses can delete key files to disable a system, power outages could see your data only partly written to disk, and badly behaved programs could overwrite essential files. Additionally, data loss could come in the form of partition and boot sector damage. All of these losses, however, can be recovered with the right software.

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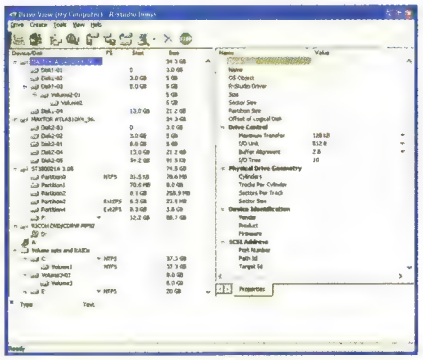
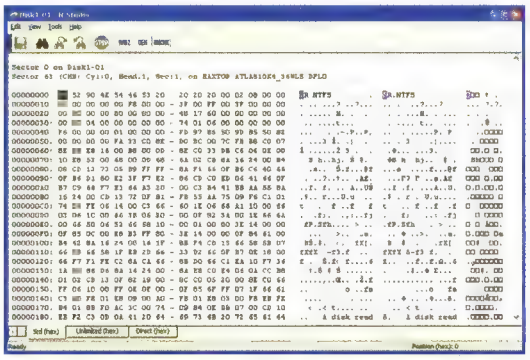


R-Studio is an example of an advanced recovery tool that can even build virtual arrays to help you recover data from multiple volumes.



Advanced recovery techniques include being able to search the disk raw for parts of your lost data still intact.

Popular names include Zero Assumption Recovery, OnTrack Easy Data Recovery, and R-Tools R-Studio (see boxout *Recovery resources* for links). All of them can scan your partitions and present a list of deleted files you can select to recover with a simple click.

Additionally these also support the more advanced forms of recovery, such as scanning a drive for recognisable data types, and even the ability to search the disk surface bit by bit for a string of data you know to exist in somewhere in your file. Looking at the raw data of your hard disk, instead of through the filter of a file system and operating system, can be an excellent learning experience.

Keep in mind however that no software tool can recover the unrecoverable. If the sectors of your disk that contain the information you are after have been overwritten with new information, then the information is lost, kaput, sentenced to the void.

This is why it's vital to start recovery as soon as you realise you need it. Drive size, file system type, and how active the drive has been will all play a part on how effective recovery procedures are, but all of these are second to how quickly you get onto starting a recovery. It goes without saying that if you realise you've lost information and you go to install some recovery software, to not install it to the partition where the files you want to recover exist – you may well end up overwriting the sectors where the deleted files reside with your data recovery tool, and wouldn't that be ironic?

All in all, data recovery software is simple and effective to use, but doesn't cover the gamut of all data loss problems.

## Hardware solutions

Sometimes the problem lies much deeper and software options become ineffective – such as a hardware failure or physical drive crash. A crashed drive generally refers to a drive whose heads have skimmed into the platters of the disk, causing irreparable damage. Old, overheated, and badly treated drives (and sometimes just bad luck) are the main causes for drive crashes.

But as with software recovery, the parts of the platters still intact will hold the magnetic variances that represent your data. Thus, with the help of some special (and expensive) equipment, these platters can still be read and your data possibly recovered from them.

Data recovery services of this kind don't come cheap. At a minimum you'll be looking at a few hundred dollars (possibly exceeding the cost of the hard drive itself!) and this can easily scale much higher.

Obviously this is a last resort for those desperate situations where the value of your lost data is higher than the money it will cost to retrieve it.

There are plenty of data recovery services in Australia (see boxout *Recovery resources*) who can recover data from all forms of magnetic and optical media (so information on CDs, DVDs etc can be recovered also).

Even RAID arrays can be partially reconstructed long enough to make images of their data.

## Prevention

Ultimately, especially in the case of your personal data, prevention really is better than cure. Effective data recovery depends heavily on what, if any, preventative measures you take.

Use the Windows Recycle Bin. Many advanced users disable it to save disk space, but if you have plenty of space you might as well use it. You never know when it will save your skin. It does, however, only protect you from accidental deletions. For those unforeseen circumstances the best preventative measure is the much touted system backup. You do regularly back up your system, don't you?

If you've just been reminded, now is as good a time as any. Even if you don't do a full backup, at the least you should regularly backup information that is irreplaceable. Even simply copying the data to another partition, drive, or machine over the network ensures it resides in more than one location, and that alone may be all you need to recover lost data. For more advanced backup options, we'll be looking at backup in-depth in a future article. ■

## RECOVERY RESOURCES

Data recovery is a big business and there are plenty of tools and services available to help you revive that essential lost data. The following is just a starting point – use Google to find more.

### Recovery software

- www.z-a-recovery.com
- www.r-tt.com
- www.stellarinfo.com/data-recovery.htm
- www.ontrack.com/easyrecoverydatarecovery
- www.active-undelete.com

### Recovery services

- www.hddrecovery.com.au
- www.datarecoverylabs.com.au
- www.cbltech.com.au
- www.payam.com.au
- www.mbs.mq.edu.au/datarecovery.html

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# QUERYING EXCEL

**David Hellaby** shows you how to tailor your spreadsheets with Excel's little-known Web importer.

It's an accepted fact that most Microsoft Office users only ever use about 20 percent of the suite's capabilities, often because they don't have the time to learn about all of the goodies it contains. Excel, with its complicated interface and feature overload is notorious for baffling even experienced users. However, many of its features are very useful in their own right.

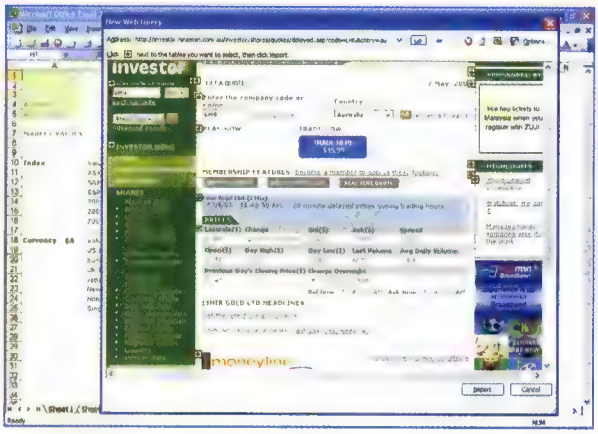
One of these features includes a built-in function to import data from selected sources. The Web Query tool, found in the past few versions of Excel, allows you to import data into a worksheet directly from the Internet or a corporate intranet. While XML and Web Services (coming in Office 2003) are likely to be the killer apps for importing and using data from external sources, Excel's Web Query is a functional, albeit rudimentary system.

The beauty of it is that you don't have to know how to write scripts or interpret HTML tags with the entire procedure requiring a few simple steps. Once imported the data can be dynamically updated so it's ideal for tracking share portfolios, fuel prices, interest rates and a host of other data that can make life a lot easier.

The disadvantage of using Web Queries is that a lot of data cannot be imported. For example, Excel will not import data from security enhanced sites such as bank Websites that don't use Windows NT security, so you cannot import your bank statement and dynamically update it. Nor will it import graphics or data from sites where scripts are used to generate or populate tables with data, even though it will display such data in the Web Query dialog box.

However, it can be used for importing a range of single and multiple tables as well as formatted or plain text, and once the data is imported it can be analysed using Excel's basic features. For that reason it's best suited for corporate intranet use, but can also be used to monitor a wide range of data at home.

Microsoft offers a free add-on for Excel 2002 that provides refreshable stock quote data in a worksheet cell. The MSNStockQuote function allows you to calculate formulas based on the function's return values so you can create your own financial analysis. Once downloaded and installed from http://office.microsoft.com/downloads/2002/Msnsq.aspx it can be configured to return a company's stock price or other stock information, such as day's high, day's low, ask, bid, close price, and so on.



The Web Query dialog box indicates where there is potentially importable data.

Alternatively you can create your own refreshable portfolio monitor in a single worksheet using imported data from multiple sites. For example, we created a worksheet that monitored multiple share indices, individual share prices and currency fluctuations, the cheapest place to find petrol, news headlines and the local weather. In other words, we created our own newspaper front page with specific, tailored information.

## Find the source

There are three main methods of importing Web Query data into Excel: using the Import Data command; cutting and pasting using Smart Tags (in Office XP) or; exporting from Internet Explorer. We used all three as each has advantages in certain situations, but you do need IE 5.0 or higher.

You can also use the Edit command in Internet Explorer; however, it is better suited to intranet use or for Websites where you have control over the content.

We selected the sources of our data by trial and error because many of the sites we initially connected to made use of scripting so the data couldn't be imported.

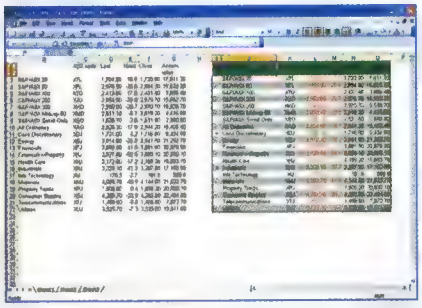
To create a Web Query, open a new worksheet and click on the cell where you want to position the imported data. Next, head to Data | Import External Data | New Web Query. The New Web Query browser will – depending on your version of Excel – open at either the home page you have set in Internet Explorer or sample MSN page. You can navigate to the Website you want by typing in a new URL and clicking 'Go'.

Once you reach your selected site, you can navigate using its standard hyperlinks from within the Web Query browser. Elements of each Webpage appear with yellow and black arrow icons, which when clicked will turn blue, change to a tick and highlight the part of the Webpage containing the data you want to import. By clicking on the Options tab (top right of the Web Query browser) you can select whether you want the data imported without formatting (raw text or data), as rich text only or full HTML formatting.

The latter works best when importing XML (eXtensible Markup Language) data, but there's no guarantee that the rich text or full ▶

## KNOW. . .

- How to import data from the Internet into Excel
- How to set up dynamically updated, multiple queries
- Where to get useful Web data
- How to use the Smart Tags in Office XP

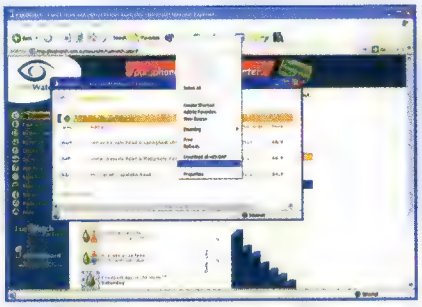


Tables can be imported as raw unformatted data (left), RTF or fully HTML formatted (right).

HTML will make any difference to how the data is imported, nor that the data will be imported at all – it depends on how the Webpage has been created and whether the data has been scripted or encrypted.

If all goes well you'll get a nicely formatted table complete with preserved hyperlinks. Even if you only get raw data, the good news is that it's still updatable. You can then place more Web Queries on a single worksheet by clicking on a vacant cell and repeating the procedure above.

Cutting and pasting from a Webpage into an Excel worksheet also works well. Highlight the text or data you want to cut and paste by holding down the left mouse button and dragging the cursor over it. Once highlighted, press <Ctrl+C> to copy it.



Data can be exported from Internet Explorer to an Excel worksheet

Open your worksheet and click on the cell where you want to position the data and press <Ctrl+V> to paste it. If you're using Office XP, before you do anything else look for the Smart Tag (a small clipboard icon) that will be at one corner of the material you have just pasted.

Click on the down arrow beside the Smart Tag to open a Paste Options menu and select Create Refreshable Web Query to open the Web Query Browser and import the data. If the data cannot be imported as a Web Query that option will not be available in the Smart Tag menu but you should still be able to paste it as static data.

Because exporting or editing from Internet Explorer automatically creates a new worksheet, it is best to begin a multiple Web Query work sheet with either one of them.

If you are searching for data on the Internet, exporting from IE to Excel has a slight advantage over importing from the worksheet because it is easier to search the Web from your native browser rather than the Web Query browser. IE also has an advantage in cases where you have to log in to a site to access the data you're after, because you may not be able to do so through the Web Query browser. However, its disadvantage is that it exports data as raw text compared to the Web Query browser which can be set to import in Rich Text Format or with full HTML formatting (if the site allows it).

To export from IE, right click on the table or text you want and select Export to Microsoft Excel in the drop down menu. A new worksheet will be opened, and by default the data will be positioned from cell A1.

If no data is downloaded and a box appears saying 'This Web query returned no data. . .' click OK. Now click on the name of the external data range in the top left of the worksheet, open the Data menu on the toolbar, select Import External Data and click on Edit Query. It will open the Web Query browser at the page you have attempted to export data from with the arrows tabs indicating where you can potentially get the data you want. Select what you want then click on Import.

## Web dynamics

One of the key benefits of Web Queries is being able to dynamically update the data over the Internet or intranet, and there are a few ways it can be done. It is worthwhile having a Refresh External data icon on your main toolbar. You can find it by opening the View menu, selecting Toolbars and checking External Data. This creates a floating mini toolbar that can be dragged to your main toolbar and locked there to keep it out of your way.

It contains several icons for editing, refreshing or setting the data range properties for a Web Query. To update data from a single Web Query click on a cell within the data range and click on the single red exclamation mark icon. A spinning globe will appear as the data is updated from the Net.

Where you have multiple Web Queries on a single worksheet, click on the icon with the green X and red exclamation mark. Again the spinning globe will appear, but this time all of the queries will be updated at the same time.

Queries can be automatically updated at set periods as long as you are connected to the Internet or your intranet, and where there are multiple queries they can be set to update at different intervals. To set the auto update, click within the data parameters, open the Data menu from the toolbar, select Import External Data, Data Range Properties. Check the 'Refresh every' box and set the number of minutes between every refresh.

It is best to enable the background refresh, so you are not interrupted while you work, and you can order it to refresh as soon as you open the worksheet.

Repeat the procedure for each Web Query and you will now have your own dynamically updated news sheets with the information you have selected. Furthermore, you now have all the grunt of Excel behind it so you can graph stock prices, run calculations, track finances and scan headlines all in the one screen.

It isn't a perfect option, but it's very useful, and it'll tide you over until Office 2003's Web Services really turn things up a notch in the coming months. ■

## WHERE TO GO

Part of the challenge in setting up successful Web Queries is finding reliable, manageable sources. Check out these local data sources:

**THE OFFICIAL AUSTRALIAN STOCK MARKET SITE**
www.asx.com.au

**ANOTHER STOCK MONITORING SITE**
http://investor.ninemsn.com.au

**FIND THE CHEAPEST FUEL PRICES AROUND**
www.fuelwatch.com.au

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# JARGON BUSTER: STORAGE

**Nirmal Chandrasena** helps you cut through the jargon with our monthly technology glossary.

### ATA (ADVANCED TECHNOLOGY ATTACHMENT)

The name coined by ANSI (American National Standards Institute) for a popular interface used between motherboards and storage devices like hard disks and CD-ROMs called IDE. It's a parallel interface and comes in a variety of speeds including UltraATA, ATA/100 and ATA/133. Serial ATA is a different technology, but appears to the operating system as standard ATA.

### CACHE

High speed temporary storage memory used for frequently accessed data. Many hard drives typically have 2MB caches, although larger caches, up to 8MB are becoming increasingly common. Most CD burners also have cache.

### MEMORY CARDS

Small, non-volatile solid-state memory devices that are commonly used with portable devices such as digital cameras, MP3 players and PDAs. Popular memory cards are Secure Digital (SD), CompactFlash (CF), Memory Stick, MultiMedia Card (MMC), SmartMedia and XD cards.

### FILE SYSTEMS

The structure used to organise and store information on storage devices. Hard drives are 'blank' when they leave the factory, and need to be formatted with a file system in order to hold data. Formatting a drive is similar to drawing lines and margins on a page. Windows 2000 and XP recognise FAT16, FAT32 and NTFS while Linux and Macintosh systems use ext2/3 or FAT16 and HFS, respectively.

### HOLOGRAPHIC STORAGE

An experimental optical technology that stores data as three dimensional holograms rather than the simpler two-dimensional format used across other storage formats. Holographic storage uses both the surface and the depth of the stored data and by adjusting the angles and frequencies of lasers, multiple chunks of data can be overlaid in the same physical space. Read and write speeds in holographic storage can surpass current technology, with demonstrated read speeds exceeding a billion bits per second.

### IMAGING/GHOSTING

An image is a 'snapshot' of a hard drive that can be used to restore or clone a particular partition. Imaging is especially useful for restoring a PC to its original configuration or creating identical configurations of operating systems and common applications on multiple machines for large corporate desktop rollouts. Images can be applied or restored over networks and CDs, and can also be mounted using virtual drive emulators.

### INFINIBAND

A serial bus specification for data flow between processors and I/O devices that is expected to gradually replace the PCI shared-bus. It supports up to 2.5GB/s throughput and connectivity for 64,000 devices.

### NAS (NETWORK ATTACHED STORAGE)

A hard disk or a disk system that is attached to a network and is giving its own IP address. NAS can consist of drive space, RAID systems and configuration software, and may be part of a SAN (Storage Area Network).

### OPTICAL MEDIA

Media that is read and written using lasers, commonly referring to CD (Compact Disc) and DVD (Digital Versatile Disk) technology. The surface of the media is physically indented with pits or grooves, which are read by lasers as the drive is spinning.

### RAID (REDUNDANT ARRAY OF INDEPENDENT DISKS)

The method of using multiple individual hard disks to work together and appear as a single disk to improve performance, provide data redundancy, or both. RAID 0 uses striping to split data between multiple disks to improve performance. RAID 1 uses mirroring with a second hard disk to make an exact copy of everything on the first for data redundancy. RAID 5 spreads the data across three disks to improve performance and if one disk fails, it provides redundancy as there will still be a complete set of data between the remaining two disks.

### SCSI (SMALL COMPUTER SYSTEMS INTERFACE)

This is a set of relatively high-speed interfaces for components and peripherals. SCSI storage devices offer high access speeds, and are used in many enterprise storage systems. However, the technology is being phased out of desktop systems in favour of UltraATA and SATA.

### SAN (STORAGE AREA NETWORK)

A sub-network that connects data storage devices and servers using fast, reliable connections. In a SAN, storage devices do not belong to any one server, but are shared as a peer resource between other servers. A SAN is accessed by users of the greater network.

### SATA (SERIAL ATA)

A new hard disk communications technology, similar to ATA. It is a serial interface, rather than parallel. This allows for potentially higher speeds. The first generation of SATA devices have a maximum bandwidth of 150MB/s. It is also hot-pluggable and the cables are much smaller than ATA cables, making them easier to manage.

### iSCSI (INTERNET SCSI)

The leading IP-storage standard used to facilitate block data transfers over intranets and long distances. iSCSI may be used to build SANs over any type of existing IP-network.

### TAPE STORAGE

An external storage medium that once served as primary storage for many computer systems, but is now used mainly for archiving. While it appears outdated, tape is often the backup of choice due to the relatively cheap cost per megabyte and large storage capacities, although it is much slower than disk-based or CD-based storage.

# LEISURE

When we need baddies battled, tombs raided and a world snooker champ, we don't call Tin Tin or James Bond – we hail **Des McNicholas.**

## DELTA FORCE: BLACK HAWK DOWN

After a promising start with the original title, the ongoing Delta Force series has received a mixed reception from gamers. In the latest release, Delta Force: Black Hawk Down, Novalogic looks set to recapture some of the early magic and attract some new fans to the franchise. Black Hawk Down is essentially an on-rail shoot-fest with a decent pace and solid graphics, loosely based on the movie of the same name. It's lots of fun and innovative enough to stand up to the competition.

Somali townships are suitably cluttered, with countless hiding places.

Somalia proved to be a watershed for the US military, and Black Hawk Down takes players straight into the confused world of regular armed forces, militia and desperate civilians. The 16 single-player missions cover Operation Restore Hope; the frantic and well publicised action of Task Force Dagger; and the final battle of Mogadishu. Multiplay, which sadly includes no cooperative mode, is available via LAN and Novalogic's NovaWorld service. It doesn't really bring anything new to the over-supplied online community, but it runs well enough and the early indications are that it will be well-supported. All up, it's a reasonable package, even if experienced players will move through it fairly quickly.

Black Hawk Down brings a good mix of mission goals and some very exciting moments. Admittedly, the missions quickly degenerate into a 'kill everything in sight' free for all, but they stand well enough on their own the first time through. Tasks range from escorting convoys to uncovering weapons caches and apprehending enemy leaders, and most of the heavily scripted missions include short notice multiple objectives. The arcade style will be seen as a step backwards by some players, but Black Hawk Down does a splendid job of maintaining pace and excitement.

Unsurprisingly, Novalogic uses a very simple control system. The uncluttered main screen includes a stance indicator and an all-seeing radar map, and movement is via mouse and arrow keys. Players have a choice of first or third-person views, and a waypoint indicator keeps things moving. Some basic fine tuning can be done to adjust the view, and quick menus are available to issue commands. The high degree of situational awareness will probably be too much for experienced players, but newcomers will appreciate the shallow learning curve.

Black Hawk Down offers a reasonable level of difficulty in most missions, driven largely by the sheer numbers of enemies that get in the way. At times, it seems as though the waves and waves of targets are never going to stop, things aren't helped by some fairly average AI on both sides either. NovaLogic has included some rudimentary team commands, but you're generally on your own in the single player game. In particular, friendly forces can't seem to shoot straight, and their path finding skills are a little less than you would expect from America's Special Forces. The enemy isn't any better, which tends to balance things out nicely!

Despite lacking the depth of some recent titles, Black Hawk Down does provide top-flight environments and intense action. Using essentially the same graphics engine as the impressive Comanche series, Novalogic has re-created the atmosphere of Somalian villages and townships very well, and the transition from helicopter to foot soldier is marked by a free-flowing feel and excellent pacing. Delta Force: Black Hawk Down is no Medal of Honor, but it's cheaper, and still a lot of fun.

www.novalogic.com

**REQUIREMENTS:** Pentium III 733MHz CPU; 64MB RAM; 750MB hard disk; 32MB Direct3D video card
**SUPPLIER:** Electronic Arts
**PRICE:** $69.95
**OVERALL** ... 1 2 3 4 5

# V8 SUPERCARS AUSTRALIA: RACE DRIVER

It's always great to see an Australian connection in games, and V8 Supercars Australia: Race Driver has more 'mates' and 'g'days' than you can poke a didgeridoo at. Officially licensed by the Australian Vee-Eight Supercar Company (AVESCO), Codemasters' Race Driver brings the very successful PS2 title to the PC. Despite the Australian tag, the game let's drivers try their skills on 31 of the world's big circuits, including Silverstone and Hockenheim, and race it out in 13 official championships.

**REQUIREMENTS:** 700MHz, 128MB RAM, 1.5GB hard disk, 32MB DirectX video card
**SUPPLIER:** Atari
**PRICE:** $89.95
**OVERALL** ... 1 2 3 4 5 6

Bathurst, Phillip Island and five other Australian tracks are all modelled in exceptional detail, along with 42 cars and 23 Ford and Holden drivers from the V8 Supercar Championship Series.

Race Driver looks outstanding on the PC, boasting terrific levels of track realism, excellent car models and first-rate environmental effects. Remarkably, the on-track experience scrubs up even better than the excellent PS2 version; and the addition of very stable (after a small patch) multiplay via LAN or Internet should attract rev-heads everywhere. The console-style storyline (including email-based race offers) slows things down a little, but it's a small price to pay for a very solid driving experience and a decent mix of configuration options. Race Driver is nicely balanced to suit experts and novices alike, with gear ratios, spoilers, suspension and brake bias all available tuning.

Everyone else seems to be facing the wrong way except me!

Race Driver's career progression and championship system work very nicely, providing plenty of pre-race information. Driver specs and players' overall ratings can be accessed as needed, and a competitive atmosphere quickly sets in. The alternative Free Race mode brings the chance to race any circuit or custom design a championship, and the Time Trial feature includes a constantly updated 'ghost car' – just stay in front of it. Aside from the console-style feel to be expected from a port, and occasional clipping problems, V8 Supercars Australia: Race Driver is a strong PC title that does a better job of capturing the V8 experience than its predecessors. No worries mate!

www.codemasters.com

# RISE OF NATIONS

This was another game we had a sneak preview of recently (*May 2003, page 140*), and things have shaped up very nicely indeed. Rise of Nations, from Big Huge Games and Microsoft, adds a little spice to the RTS genre, with fast-paced missions, a terrific mix of civilisations and units, and well-balanced RTS and strategic elements. With 18 civilisations, 6,000 years of history, and the chance to pit jet fighters against black powder cannon, Rise of Nations has enough to keep hardened RTS veterans and newcomers happy. The single-player game is supported by eight-player multiplay via Internet or LAN, and the comprehensive scenario editor brings extensive replay value.

**REQUIREMENTS:** 500MHz CPU; 128MB RAM; 800MB hard disk; 16MB DirectX video card
**SUPPLIER:** Microsoft
**PRICE:** $99.95
**OVERALL** ... 1 2 3 4 5 6

Rise of Nations matches the traditional RTS goals of finding resources and building an economy, with the interesting twists of controlling several cities at once and planning world-dominating strategies in the optional Conquer the World mode. National boundaries are shown on-screen, and crossing them without the proper precautions comes at the cost of sick troops and probable defeat. The result is a stronger emphasis on national development in the early stages of the game, and players should enjoy the move away from tank rushes and random assaults. The construction and research interfaces are well designed, and plenty of on-screen tips are available to set things in the right direction and warn of disaster.

Rise of Nations looks great, and the on-screen interface is tidy and intuitive to use.

Big Huge Games has introduced an exceptionally good level or 'epoch' system that brings a much greater sense of pace and achievement than most RTS titles. Its claim that players can span the whole of history in less than an hour isn't far off the mark, which adds remarkable intensity to both the single and multiplay experiences. The chance of catching an industrial age opponent out with information age technology is too good to resist, and the smart economic AI means that players have the opportunity to concentrate on advancing through the ages as quickly as possible. Rise of Nations isn't the 'new epoch' in PC games claimed by Microsoft, but it's a great RTS that successfully brings together the cerebral elements of turn-based civ-builders with a real-time strategy pace.

www.microsoft.com/games

## MEDIEVAL TOTAL WAR: VIKING INVASION EXPANSION

We provided a quick preview of Creative Assembly's Viking Invasion a couple of months ago, and the final product certainly lives up to our high expectations. The Total War series still leads the field in historical strategy gaming, and Viking Invasion brings a host of new elements improving significantly on the original game. A new campaign set in 793 A.D. lies at the heart of the expansion, tracing the period in which the Vikings spread fear and destruction throughout Europe. The campaign is well structured, with new playable factions, units and equipment.

Viking Invasion introduces an improved pre-battle setup option that's compatible with the original campaigns.

It's a shame that no obvious improvements have been made to the game's strategic or multiplayer elements, but no-one will be disappointed with the value offered by this expansion. Medieval Total War: Viking Invasion builds on and improves a terrific game – this is a must-have release for veterans of the original, and newcomers to the genre could do no better than buying both.

www.totalwar.com

**SUPPLIER:** Activision
**PRICE:** $49.95
**OVERALL . . .** 1 2 3 4 5 6

## VIETCONG

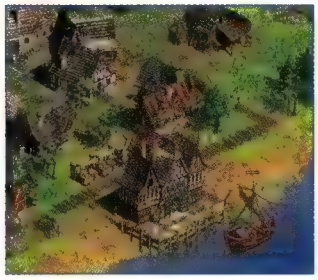
The Vietnam War is a surprisingly untapped FPS environment, although a small flurry of titles are now under development. Illusion Softworks' Vietcong brings well-crafted jungle settings, real-world characters and a (generally) tense atmosphere that gives it a very different feel to the sci-fi or WWII titles we're used to. Sergeant First Class Steve Hawkins leads the way against the VC, through a good mix of 20 missions; a frantic Quick Fight Mode; and basic multiplay via LAN and Internet. It's a very good package overall, despite a few minor presentation glitches and a fairly superficial squad control setup.

Vietcong's key advantage undoubtedly lies in strong AI that takes maximum advantage of the close-in jungle terrain and generally avoids the traditional FPS frontal assaults. The relatively limited range of weapons are more than enough in most environments; some of the sounds and effects are outstanding; and the option to switch off all player aids makes for terrifically tense patrols. It needs a patch to address some technical issues, but Vietcong is a refreshing title in a genre that needs a boost.

www.take2games.com

**SUPPLIER:** Take 2 Interactive
**PRICE:** $89.95
**OVERALL . . .** 1 2 3 4 5 6

## 1503 A.D. THE NEW WORLD



Sunflowers had a reasonable hit with the empire-building 1602 A.D. a few years ago, despite launching into a market that was flooded with strategy titles. 1503 A.D. The New World is essentially more of the same, but the relatively dated graphics and cumbersome interface will probably lessen interest this time around. Consisting of a twelve mission campaign, single missions and a 'continuous' (sandbox) mode, 1505 A.D. brings decent replay value and a good mix of objectives – although the lack of multi-play is a little surprising.

The usual management aspects are supplemented by a strong seaborne trading element, which works very well, and a comprehensive range of construction options are available. An AI balancing system means that rival states will only get aggressive in response to players' actions, so players can choose to concentrate on construction and the economy for as long as they like. It can be a bit slow, but 1503 A.D. The New World is a reasonable strategy title that covers an interesting historical period.

www.1503ad.com

**SUPPLIER:** Electronic Arts
**PRICE:** $99.95
**OVERALL . . .** 1 2 3 4 5 6

## WILL ROCK

Will Rock, from Russian developer Saber Interactive, is a fun shooter in the Serious Sam style. The storyline – which includes imprisoned Greek gods and terrorists – is largely unimportant, as players fight their way past skeletons, statues and sodded-off deities through a maze of well-crafted environments. Will Rock's intense single player campaign is complemented by well-supported multiplayer options, and Saber has thrown in some very interesting (and messy!) weapons. The pacing is a little hit and miss, with things jumping between explosives-ridden mayhem and some fairly dull puzzle elements, but the overall experience is good.

What Will Rock's enemies lack in AI, they more than make up for in sheer numbers and a remarkable ability to appear out of nowhere. Fortunately, Will's initial pistol and shovel are soon replaced by flaming crossbows and atomic rifles.

It's a basic shooter at heart, but Will Rock neatly balances traditional FPS gameplay with some innovative environments, impressive special effects, and a good sense of humour.

www.ubisoft.com

**SUPPLIER:** Ubisoft
**PRICE:** $89.95
**OVERALL . . .** 1 2 3 4 5 6

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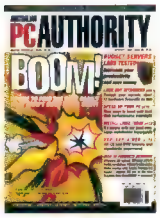


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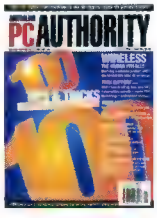


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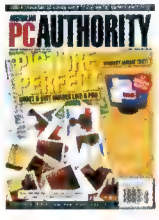


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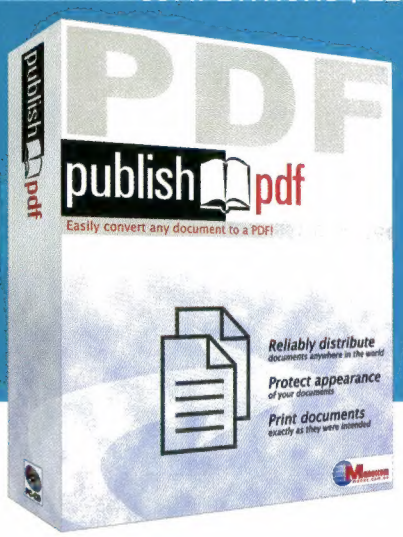


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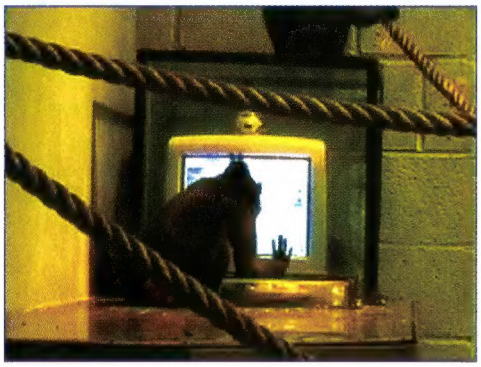
# END

Every month we'll take a short tour through the slightly more crazy stuff that crosses our desks. Send your finds to **end@pcauthority.com.au**.

## MONKEYS TAKE ON SHAKESPEARE, SHAKESPEARE WINS

Put six monkeys at the business end of six PCs, and give them enough time and they could produce a Shakespearean sonnet, or a Psalm, or even an issue of *PC Authority* (don't dig too deep on that last option - it's a little too close to the truth...).



At least this is the premise behind, *Notes Towards the Complete Works of Shakespeare*. Six Sulawesi Crested Macaques, Elmo, Gum, Heather, Holly, Mistletoe and Rowan, were given access to a PC in their enclosure in the Paignton Zoo in the UK in the hope that they might produce a work of genius.

Instead, they managed to pump out five pages of text, mainly consisting of 's'.

As the following excerpt shows, some portions are quite provocative:

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aaaaaaassssssssssssssssfss
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gggaaavmlvvssajjjlsssssssssss
ssssajjjajaajjssssaaaaaaaaaaa
avvjjjjlajj'

Arguably, the work is more reminiscent of Shakespeare's earlier works than his esteemed Sonnets.

The minds behind *Notes Towards the Complete Works of Shakespeare* comment that 'animals are not machines. Monkeys producing actions are not equivalent to a random generator such as a computer. On the contrary, it is possible that the monkeys will eventually produce the complete works of Shakespeare but not simply because of chance, but also because they can think and learn.'

While this is an interesting interpretation of the project by the project's own creators, End begs to differ with the conclusions. End is personally inclined to believe it is within the realm of possibility that such an experiment might produce a complete work of Shakespeare. However, it is very likely a practical impossibility that the complete works could actually be created, regardless of the number of monkeys involved. This is because, as the project creators state above, monkeys are not totally random. As such, it is the very non-randomness that makes it more likely that the Monkeys will never produce the complete works of Shakespeare due to them never exploring the range of options open to a truly random agent. So, in opposition to the conclusions of the project creators, it is the very capacity of Monkeys to think and learn that almost certainly precludes the possibility of them every completing their ascribed task.

Which leaves End to ponder how the hell *PC Authority* manages to get written each month...

www.vivaria.com

But man, proud man,
Dressed in a little brief authority,
Most ignorant of what he's most assured,
His glassy essence, like an angry ape,
Plays such fantastic tricks before high heaven
As makes the angels weep; who, with our spleens,
Would all themselves laugh mortal.
*Bobo the monkey and William Shakespeare – Measure for Measure, II:2*

## GOD BLESS THE INTERNET

### FLASH MOVIES

**GHOSTS OF ALBION**

London, 1838. As Demons swarm across the land, William and Tamara Swift must fight to find the wound in the Heart of London.

www.bbc.co.uk/cult/ghosts

**DOCTOR WHO**

Another series from the BBC, the animated Doctor Who was written by Douglas Adams. Well worth a look.

www.bbc.co.uk/cult/doctorwho/shada/index.shtml

**ATOM FILMS**

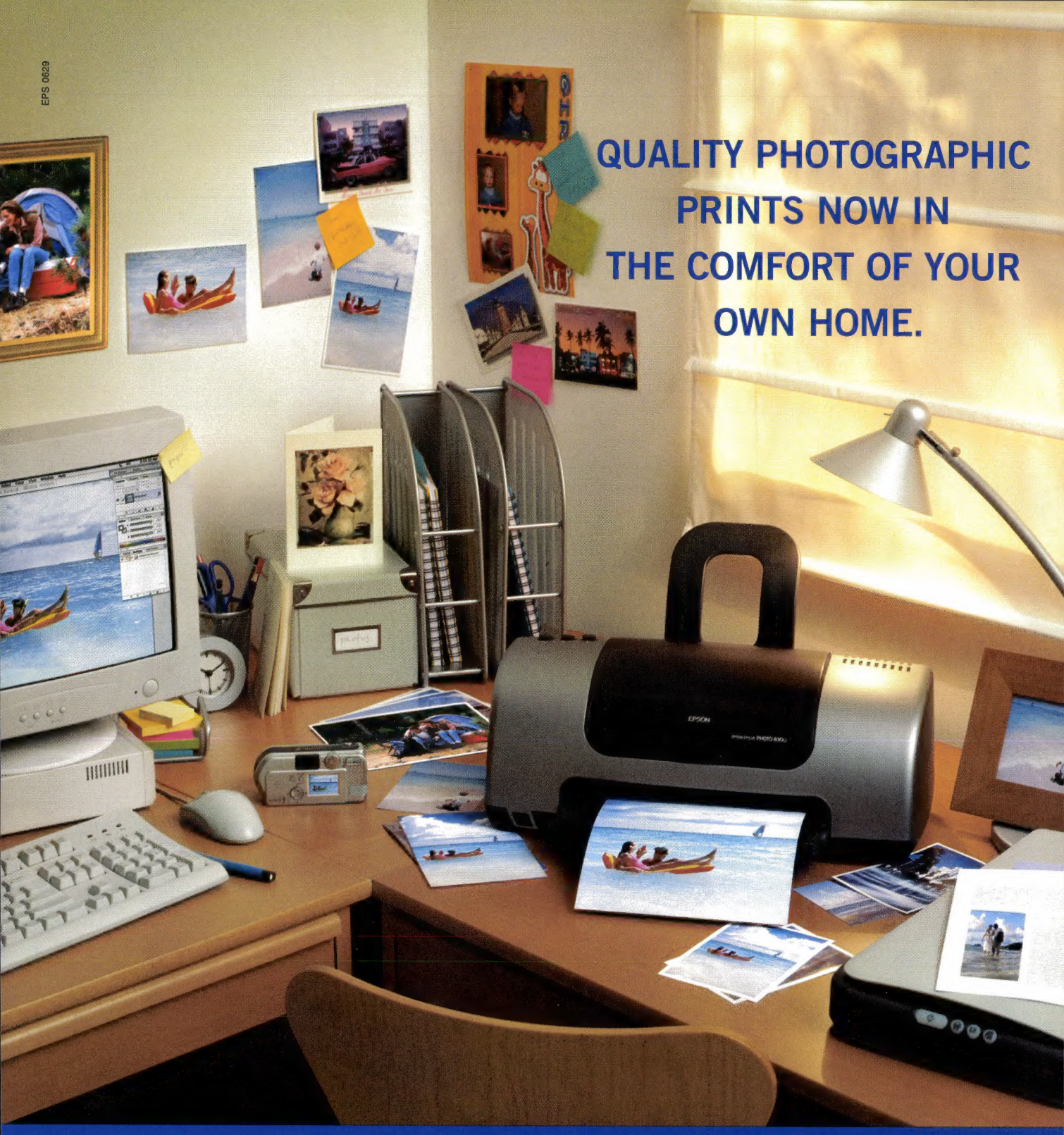
The Atom Films site has a huge range of short films, in a variety of formats, including some very high quality stuff. Be sure to check out the Star Wars fan films.

www.atomfilms.com

## WIN! FREELANCER

Experience a vast, open-ended universe filled with an infinite number of adventures. You are the freelancer Edison Trent, an intergalactic jack-of-all-trades. Your mission: do whatever you want. Congratulations to Jim for winning a copy of Freelancer for his Flash movie suggestions.

EPS 0629

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